



This project is co-funded by  
the European Union and the Republic of Turkey.

**Protection of Waters Against Agricultural Pollution Through  
Establishment Of A Monitoring And Reporting Methodology For The  
Nitrate Action Plans  
EuropeAid/140563/IH/SER/TR**

**NATIONAL CONFERENCE  
PROTECTING WATERS AGAINST AGRICULTURAL POLLUTION**

**CONTROL AND MANAGEMENT STUDIES OF AGRICULTURAL POLLUTION IN TURKEY**

**Yusuf GÜRBÜZ  
Working Group Manager**

**June 2, 2022  
Ankara**



**T.C. ÇEVRE, ŞEHİRCİLİK VE  
İKLİM DEĞİŞİKLİĞİ BAKANLIĞI**



**Çevre ve İklim Eylemi  
Sektör Operasyonel Programı**



**T.C. TARIM VE  
ORMAN BAKANLIĞI**



**NEPİZ**

**NIRAS**



This project is co-funded by  
the European Union and the Republic of Turkey.

**Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans**

## **CONTENT**

- **NITROGEN CYCLE AND CONVERSION OF NITROGEN IN SOIL**
  - **Nitrate Pollution in Waters and the Consequences**
- **POLICY DOCUMENTS, LEGISLATION AND EU COMPLIANCE**
- **NITRATE POLLUTION MONITORING STUDIES**
  - **Monitoring Infrastructure and Nitrate Information System (NIBIS)**
- **CODE of GOOD AGRICULTURAL PRACTICE**
- **DETERMINATION OF NITRATE SENSITIVE ZONES (NHB)**
  - **NVZ Determination Method and Current Stage**
- **PREPARATION OF NITRATE ACTION PLANS**
  - **Settlement Based Nitrate Action Plan**
- **IMPLEMENTATION, MONITORING AND REPORTING OF NITRATE ACTION PLANS**



This project is co-funded by the European Union and the Republic of Turkey.

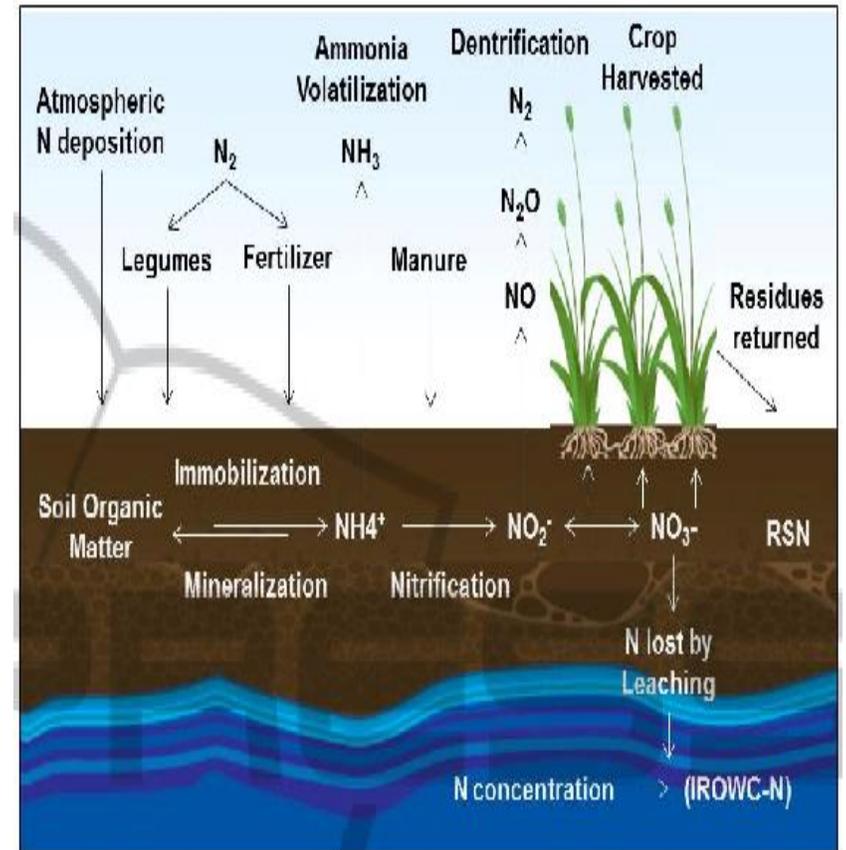
Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## NITROGEN CYCLE IN SOIL

- Presence of nitrogen in the soil;
  - changes depending on physical, biological and chemical events.
- N motion occurs in different forms with these complex events:
  - Ground entry (inputs);
  - Within the soil (conversions) and
  - Coming out of the soil (losses)
- All of these events are defined as the Soil N cycle.

The soil N cycle is the most important part of the overall N cycle in nature.

The end product of the oxidation of nitrogen in the soil is **NITRATE**.





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## **NITROGEN CONVERSION**

**Nitrogen applied to the soil, in whatever form, undergoes various transformations and eventually turns into nitrate (**NO<sub>3</sub><sup>-</sup>**).**





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

**The excess nitrate ( $\text{NO}_3^-$ ), which is formed as a result of the application of nitrogen fertilizer **more than the plant needs or when it does not need it**, is **washed away or leak by precipitation and irrigation waters** and move away from the plant root, passes into the surface and underground waters and **causes pollution.****

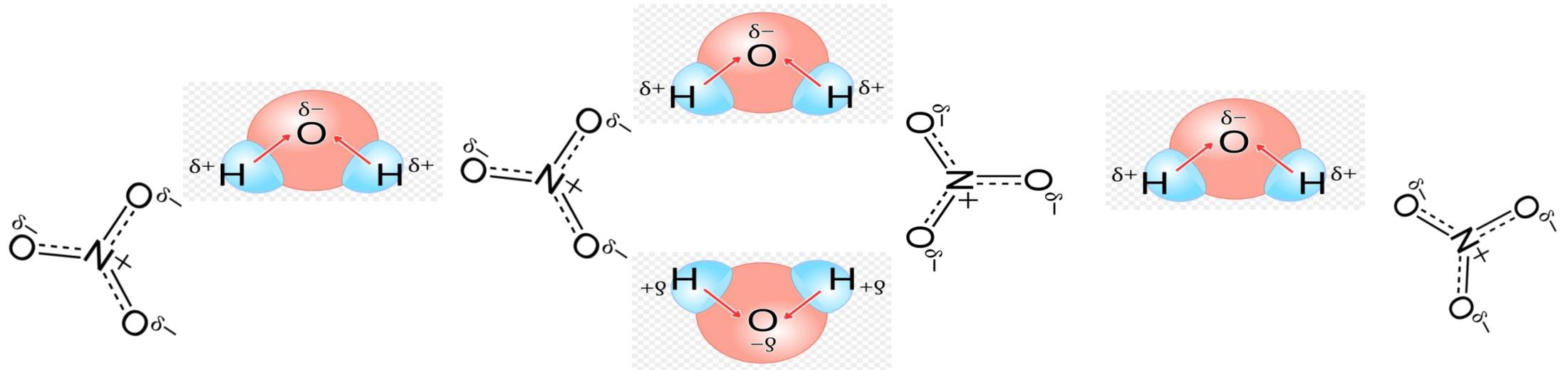




This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## NITRATE AND WATER



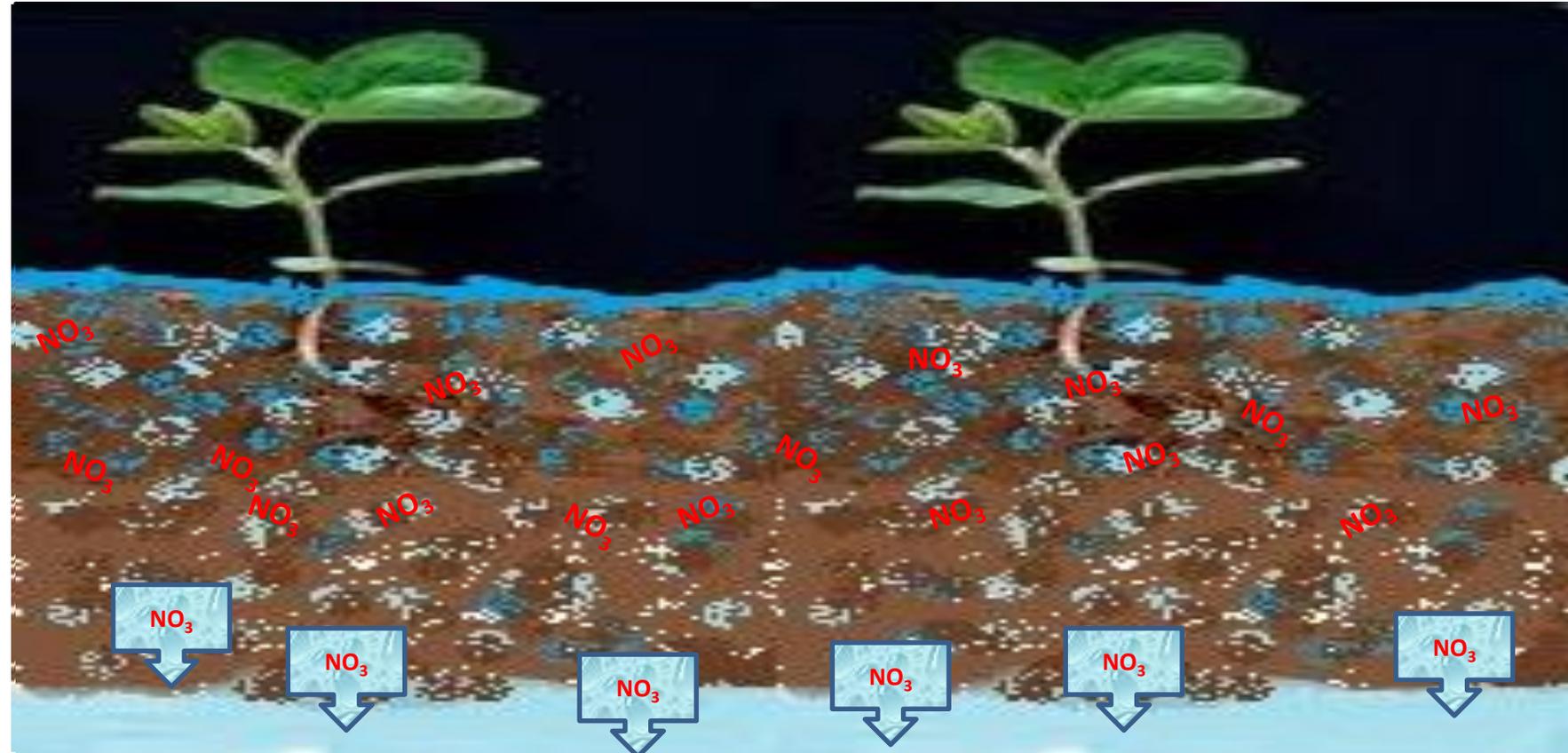


This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## NITRATE POLLUTION

Due to its solubility in water, the biggest pollution in waters caused by agricultural activities is nitrate pollution, which is easily displaced and permanent.





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## AGRICULTURAL POLLUTION





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## CONSEQUENCES OF AGRICULTURAL POLLUTION

### Effects on human health

Nitrate can be converted to nitrite in the stomach and intestines.

- ✓ In people who use drinking water with a high nitrate concentration, nitrate turns into nitrite in the stomach and intestines, mixes with the blood, and prevents the blood from transmitting enough oxygen to the tissues, and poisoning occurs in 3-6 months old babies, which manifests itself with cyanosis (bruising), known as blue baby disease.
- ✓ Nitrite reacts with organic amines to form nitrosamines, which are known to cause cancer and mutation.





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## CONSEQUENCES OF NITRATE POLLUTION

### Effects of nitrate on human health

- It causes **hemodynamic disorders** such as disruption of fluid and electrolyte balance, blood volume and blood circulation.
- It causes an **increase in esophageal, colon, prostate and bladder cancers** in humans.
- It has been determined that there is a **strong correlation between high nitrate concentration in drinking water and diarrhea rates.**





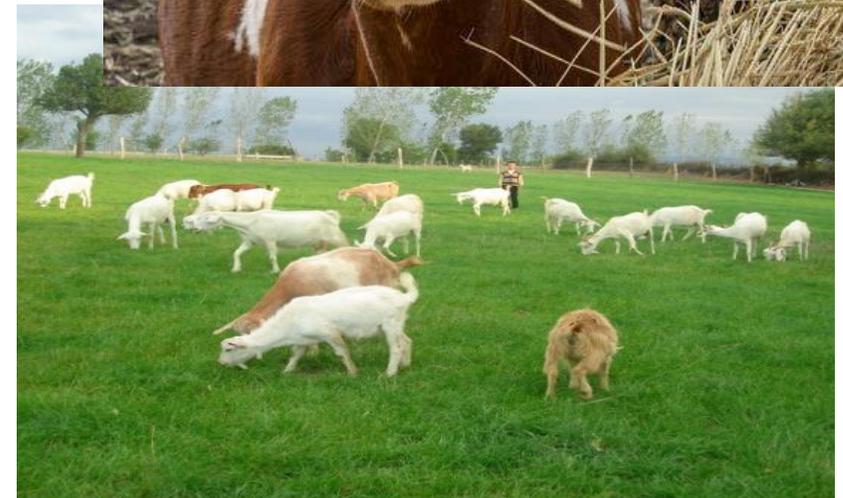
This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## CONSEQUENCES OF NITRATE POLLUTION

### Effects of nitrate on animal health

- Decline in live weight and milk yield
- Decreased fertility
- Methemoglobinemia





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## **NITRATE ACQUISITION IN WATER**

**The result of nitrate  
accumulation in  
waters is  
eutrophication.**



**The increase in nitrogen and phosphorus compounds, which are plant nutrients in water, causes deterioration of water quality and the balance of flora-fauna in the water, and the extinction of aquatic life, especially fish.**



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## **AGRICULTURAL POLLUTION**

Since the detection and prevention of agricultural pollution is difficult and time-consuming, the most effective method is to take precautions at the source before pollution occurs.





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## FRIENDLY AGRICULTURAL PRACTICES

This emerging environmental pollution and health problems have led to the **search and development of environmentally friendly production techniques, which are alternative to agriculture**, where input usage is intense in many countries.

While our country is planning agricultural production in the agricultural sector, as in all other sectors, it has adopted the widespread use of environmentally and climate-friendly practices and included in our top policy documents.





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## AGRICULTURAL NITRATE POLLUTION ON POLICY DOCUMENTS

### ***11. DEVELOPMENT PLAN***

***Measure 406.4.*** Measures to prevent water pollution originating from agriculture will be expanded.

***Measure 708.2.*** Environmental support and incentives will be increased to increase the quality of life in rural areas and to turn the countryside into protected, livable and productive areas.



T.C. TARIM ve ORMAN BAKANLIĞI  
**2019-2023**  
**STRATEJİK PLAN**

### STRATEGIC PLAN 2019-2023

<b>Objective A 4</b>	To ensure the sustainable management of soil and water resources
<b>Target H4.1</b>	Ensuring the protection and efficient use of soil and water resources
<b>Performance Indicator PG 4.1.3</b>	Number of river basins in which nitrate sensitive areas are determined and action plans are prepared (Cumulative)
<b>Performance Indicator PG 4.1.4</b>	The rate of analysis at stations where nitrate monitoring is performed in surface and underground waters (%)
<b>Strategies</b>	Nitrate pollution caused by agricultural activities will be monitored and nitrate sensitive areas will be identified and Action Plans will be prepared to prevent nitrate pollution.



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## LEGISLATION AND EU HARMONIZATION



### EU LEGISLATION

#### “Nitrate Directive”

**Council Directive 91/676/EEC** Concerning the protection of waters against pollution caused by nitrates from agricultural sources

**Purpose:** Detection, reduction and prevention of pollution caused by nitrate of agricultural origin in water.



### Turkish National Legislation

“Regulation on the Protection of Waters Against Nitrate Pollution from Agricultural Origin” was published in the Official Gazette dated 18 February 2004 (Revised 23 July 2016).

#### BASIC PROVISIONS OF THE REGULATION

- Identification of contaminated or threatened waters
- Identification of Nitrate Vulnerable Zone
- Preparation of Code of Good Agricultural Practices
- Creation of Agricultural Action Plans
- Establishment of Monitoring Network and Reporting System



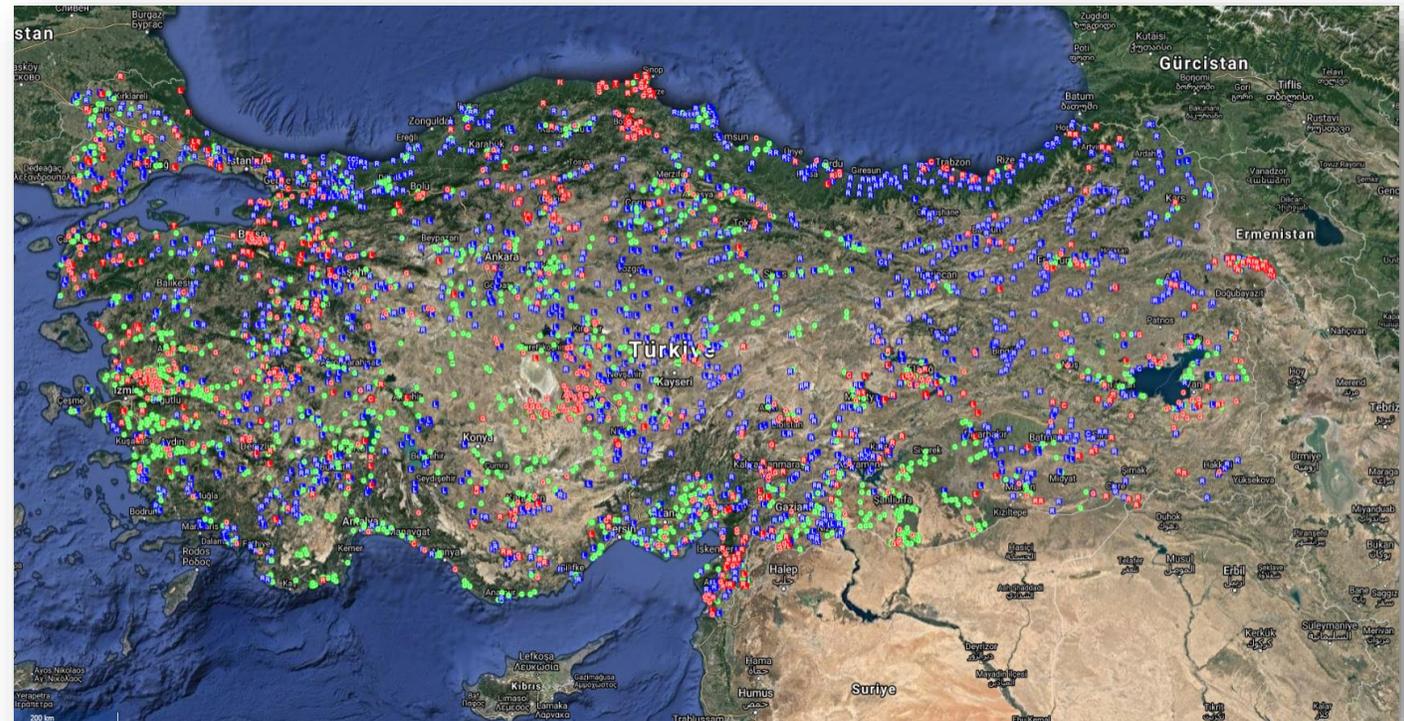
This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## DETERMINATION OF CONTAMINATED OR RISK OF POLLUTION

### NITRATE POLLUTION MONITORING STUDIES

It is carried out in order to determine the polluted or threatened waters, to identify the nitrate sensitive areas and to evaluate the effectiveness of the measures implemented after the action plans are implemented.





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## MONITORING INFRASTRUCTURE



Monitoring  
network  
which has up  
to 4.846  
points



Web based  
Nitrate  
Information  
System (NIBIS)



Mobile  
laboratory in  
20 provinces



Nitrate  
pollution  
inspection  
vehicle in 10  
provinces



Analysis  
infrastructure  
in 81  
provinces



Nitrate  
working team  
in every  
province



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

GROUND WATER	
PARAMETER	MONITORING FREQUENCY
Nitrate (mg/l)	once in a month
Ortho-phosphate (mg/l)	once in a month
Total Phosphorus (mg/l)	once in a month
Total Nitrogen (mg/l)	once in a month
Dissolved Oxygen (mg/l)	once in a month
chlorophyll-a (mg/l)	once in a month
Secchi Disc Depth (m)	once in a month
pH	once in a month
EC (mS/cm)	once in a month
Temperature (°C)	once in a month

## MONITORING PARAMETERS AND MONITORING FREQUENCY

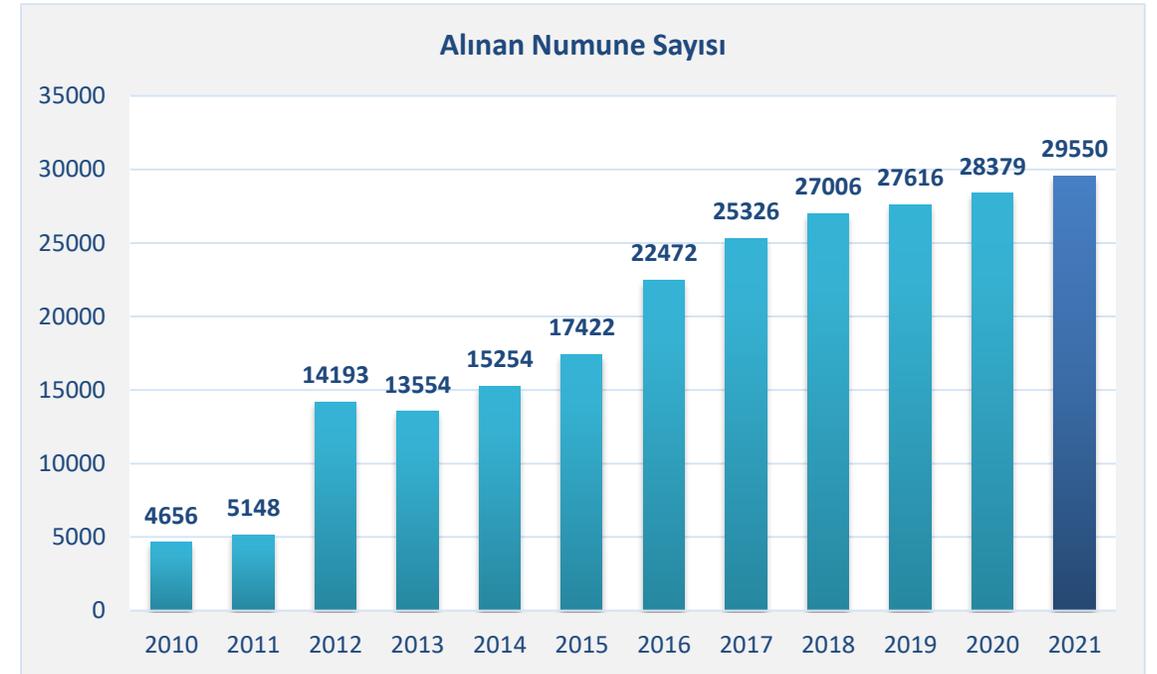
GROUND WATER	
PARAMETER	MONITORING FREQUENCY
Nitrate (mg/l)	Every three month
pH	Every three month
EC (mS/cm)	Every three month
Temperature (°C)	Every three month



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

**With the monitoring infrastructure established in our 81 Provincial Directorates, approximately 30,000 samples are taken annually and approximately 200,000 analyzes are performed in different parameters.**





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## NITRATE INFORMATION SYSTEM (NİBİS)

Developed to be used in pollution  
monitoring studies in waters caused  
by agricultural activities;

- Data collection
- Monitoring
- Mapping
- Evaluation
- Reporting

HAKKINDA MEVZUAT SSS DUYURU İLETİŞİM GİRİŞ

Tarım Reformu Genel Müdürlüğü  
Tarımsal Çevre ve Doğal Kaynakları Koruma Daire Başkanlığı

**NİBİS**  
NİTRAT BİLGİ SİSTEMİ

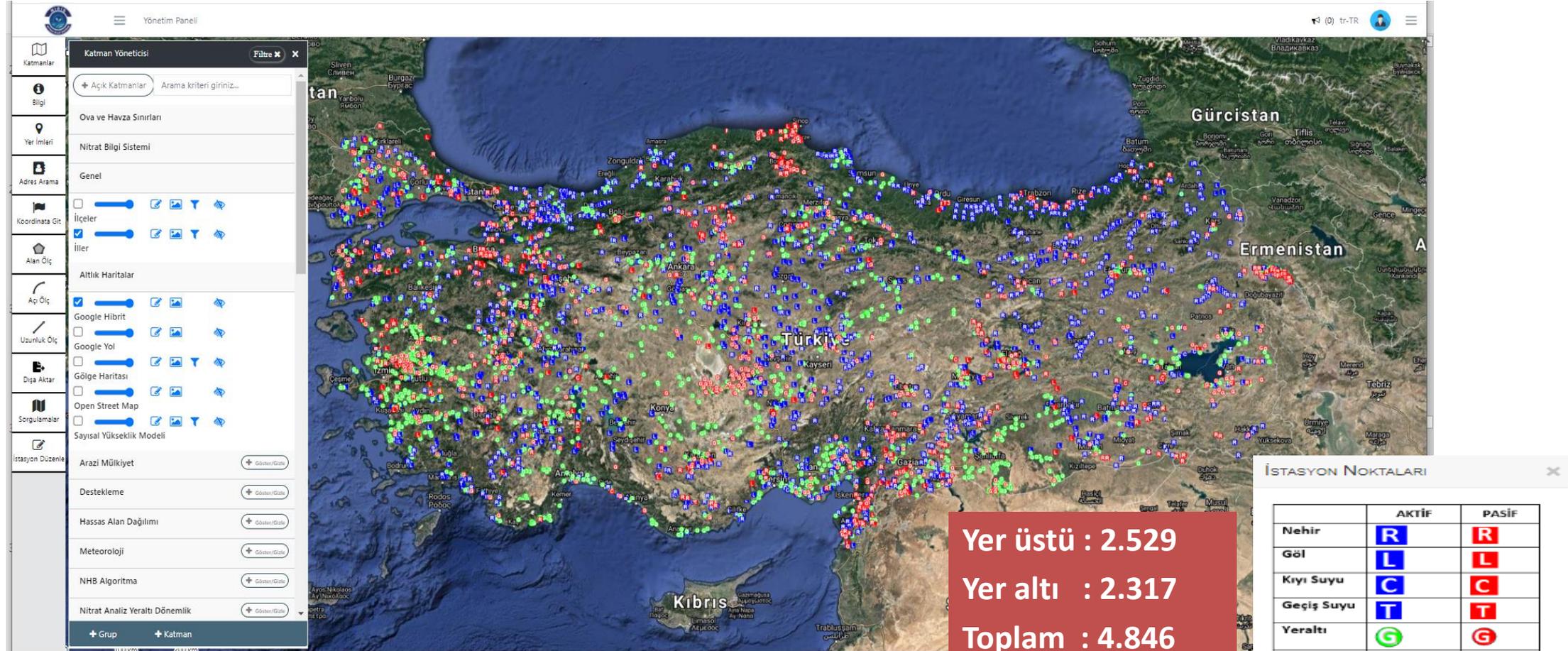
**NİBİS NİTRAT BİLGİ SİSTEMİ**  
Veri toplama, izleme, haritalama, değerlendirme ve raporlama uygulamasıdır.



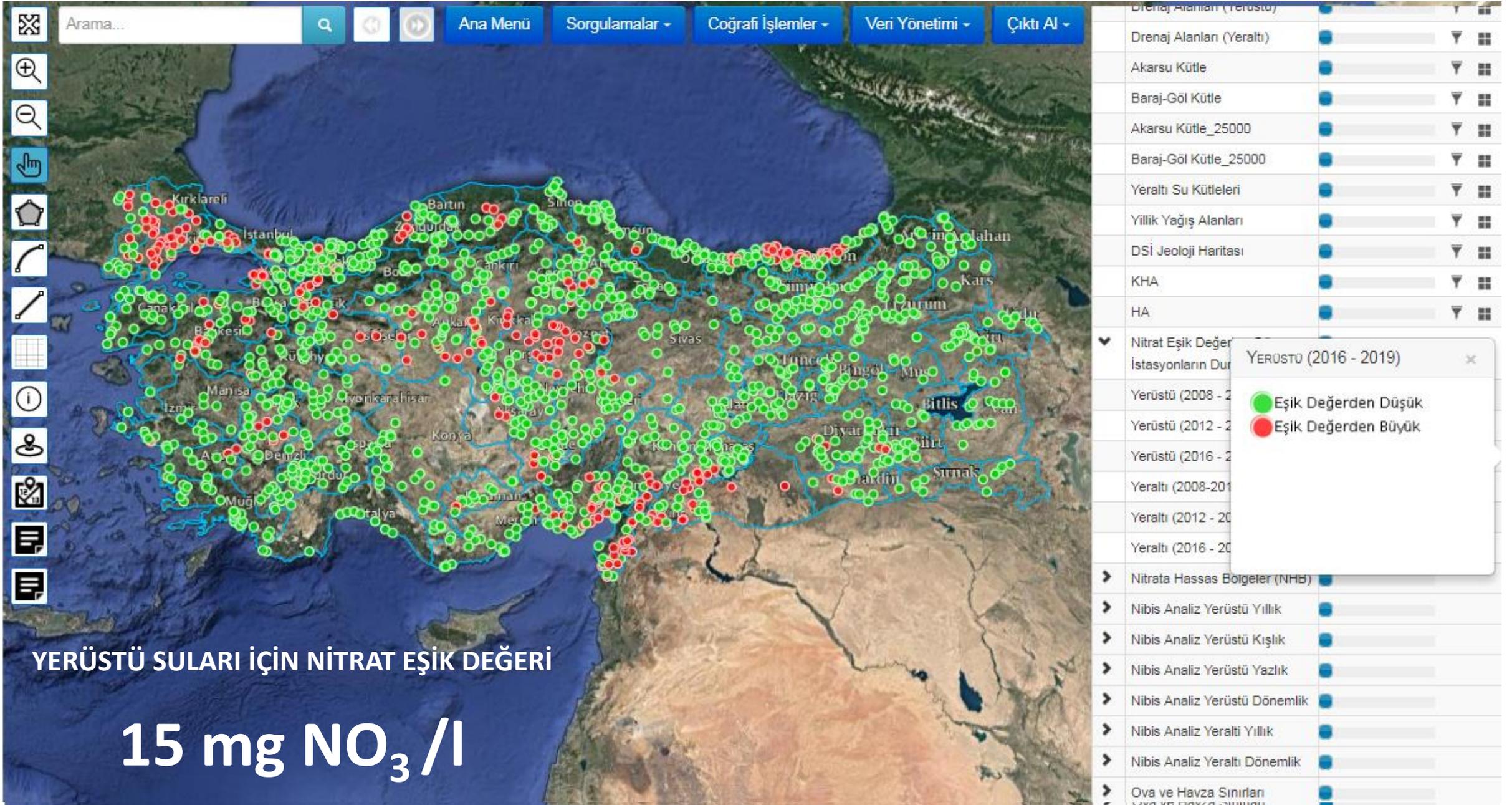
This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

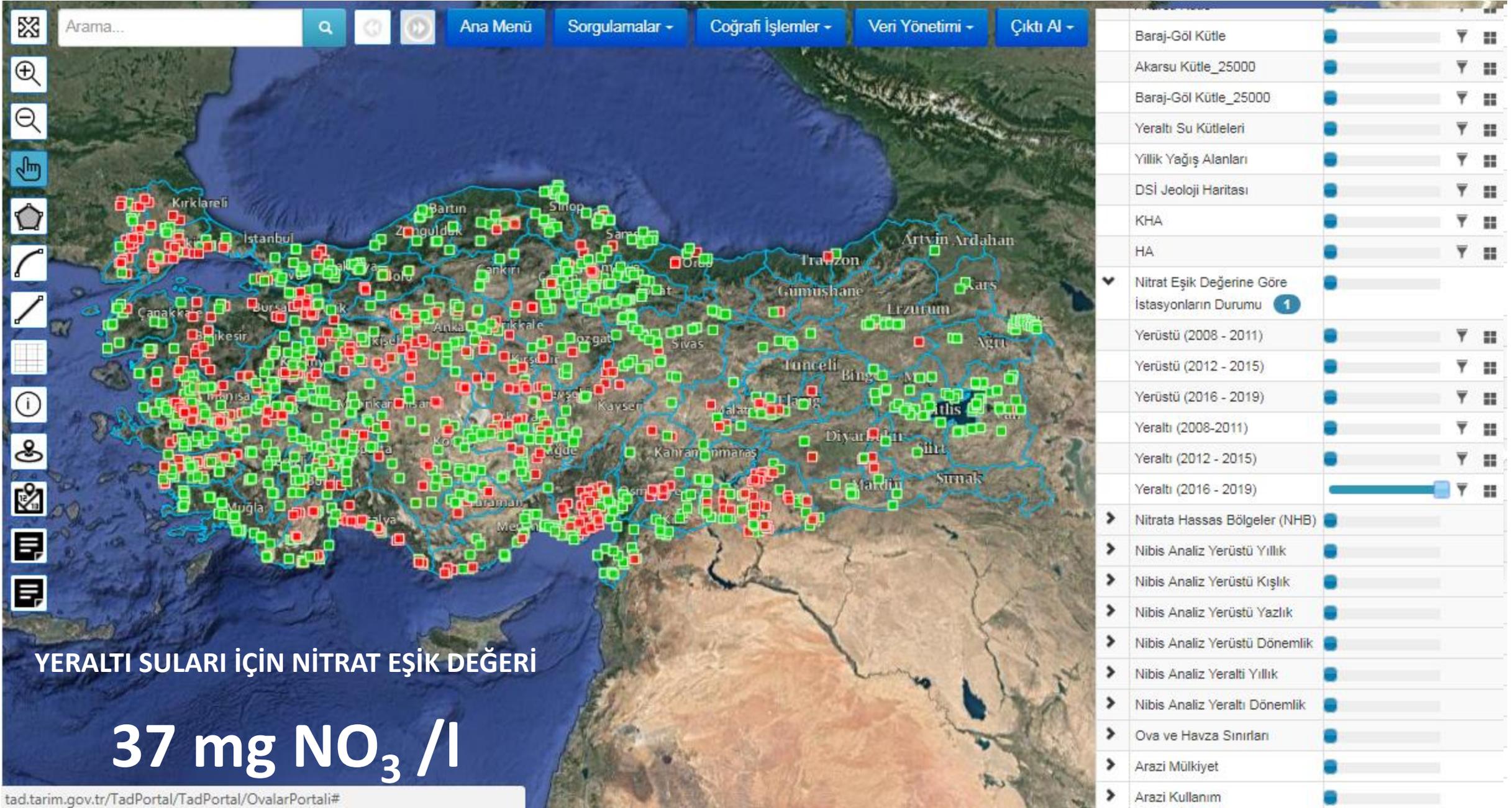
## NITRATE POLLUTION MONITORING NETWORK

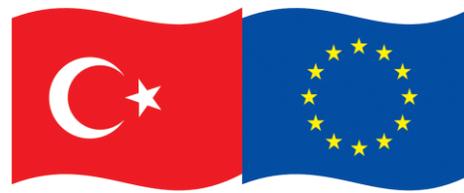


# STATIONS SITUATIONS ACCORDING TO NITRATE THRESHOLD (GROUND WATER)



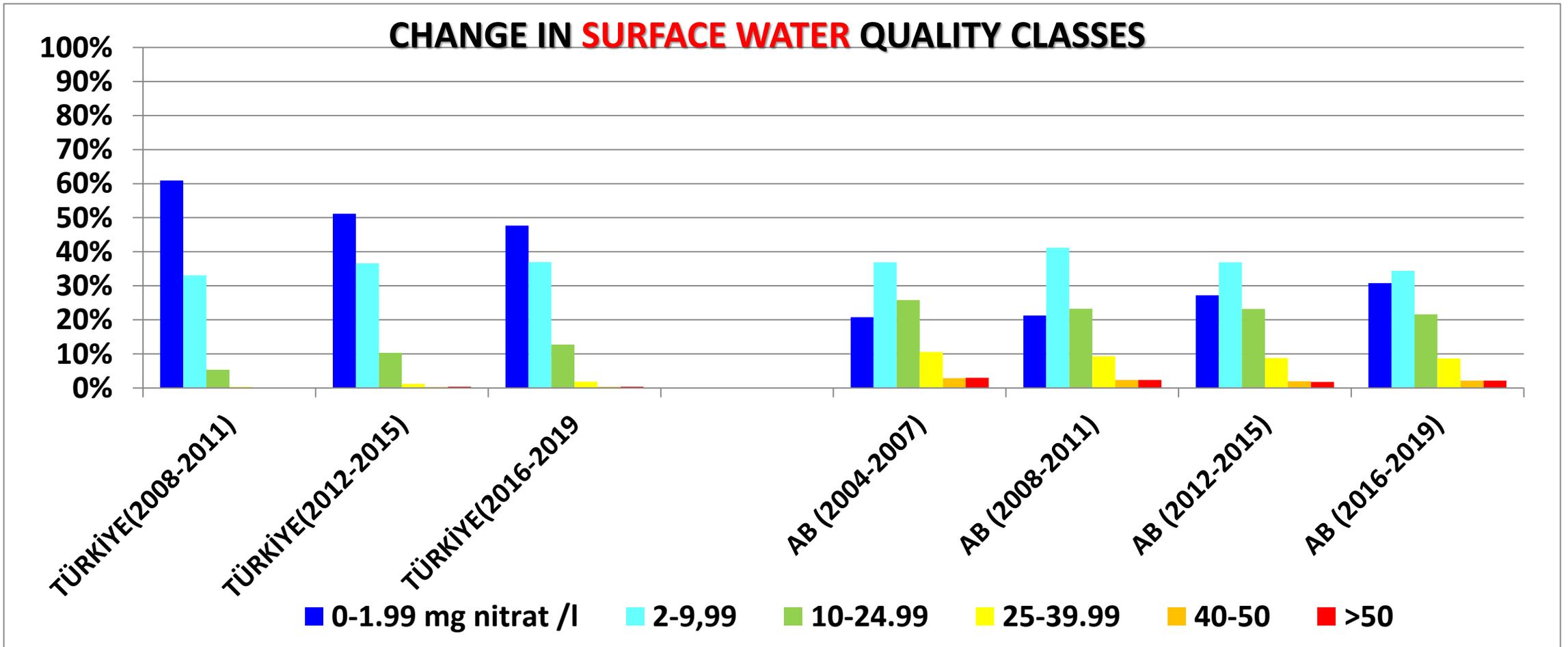
# STATIONS SITUATIONS ACCORDING TO NITRATE THRESHOLD (GROUND-WATER)





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

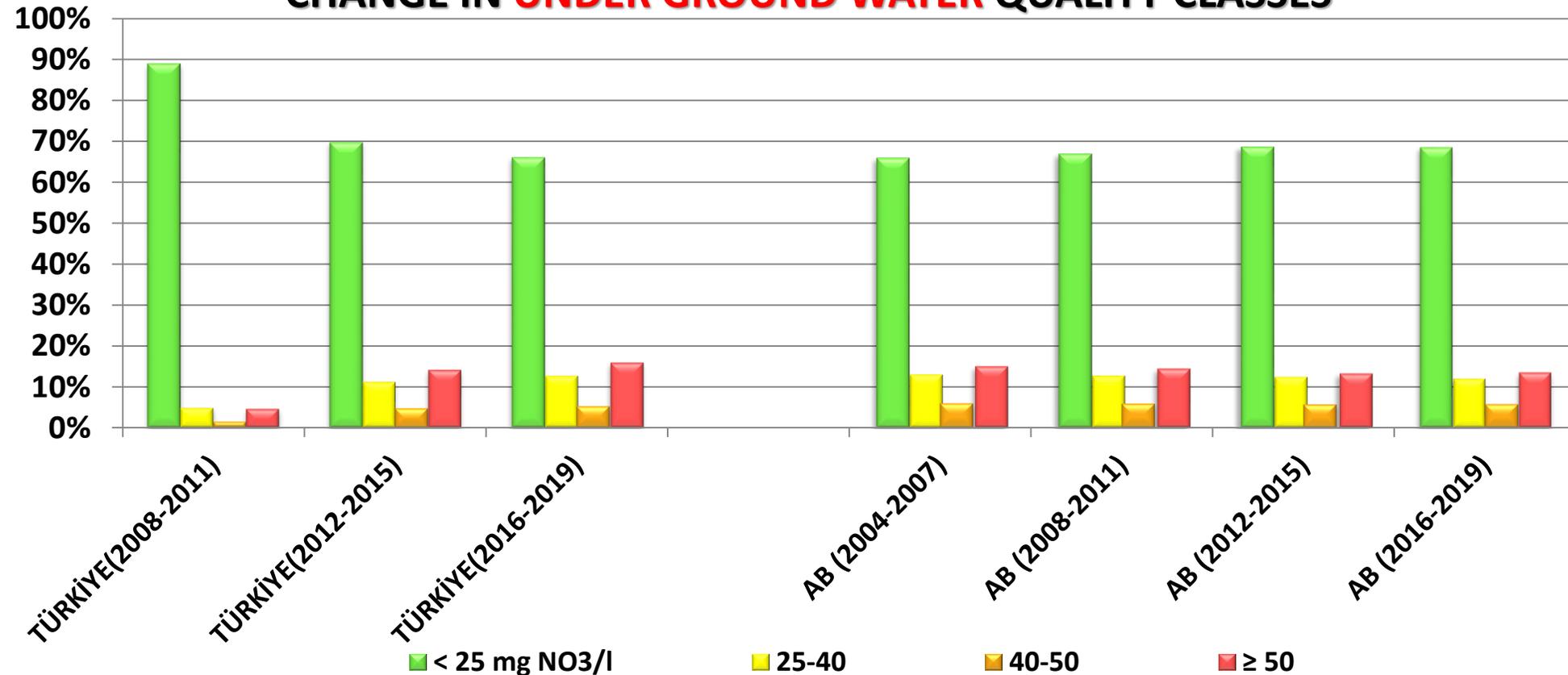




This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

### CHANGE IN UNDER GROUND WATER QUALITY CLASSES





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## CODE OF GOOD AGRICULTURAL PRACTICES

It was published **in the Official Gazette dated 11.02.2017 and numbered 29976** as an annex to the Code of Good Agricultural Practices on the Prevention of Agricultural Nitrate Pollution Caused in Waters (Communiqué No: 2016/46)

Ek-1



T.C.

TARIM VE ORMAN BAKANLIĞI

İYİ TARIM UYGULAMALARI KODU



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## CODE OF GOOD AGRICULTURAL PRACTICES

It is a framework document that includes measures to be taken by farmers in order to protect water resources against nitrate pollution caused by agricultural activities.





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## CODE OF GOOD AGRICULTURAL PRACTICES

### Agricultural Land Management

- Crop alteration,
- Minimum Vegetation,
- Erosion control and tillage,
- Mulching,
- Anız Yönetimi
- Stubble Management

### Plant Nutrient Management

- Quality and Capacity of Animal Manure Warehouses
- Periods when it is not appropriate to apply fertilizers to the soil
- Fertilizer application conditions on sloping lands, lands close to water sources
- Correct application amount, time and methods of chemical and animal manure
- Fertilization Plans and Manure Used Records,





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## CODE OF GOOD AGRICULTURAL PRACTICES

### Plant Protection Products Management

- Use of correct product
- Control of packaging waste

### Irrigation Management

- Irrigation Management to Prevent Agricultural Pollution

### Training, Awareness and Business Records

- Farmer training and extension
- Recording of business entries





This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## **NITRATE VULNERABLE ZONE**

### **Nitrata Vulnerable Zone;**

**Terrestrial regions affecting natural freshwater lakes, other freshwater resources, estuaries and coastal waters that are determined to be eutrophic due to agricultural pollution or that may become eutrophic in the near future if necessary precautions are not taken.**





This project is co-funded by  
the European Union and the Republic of Turkey.

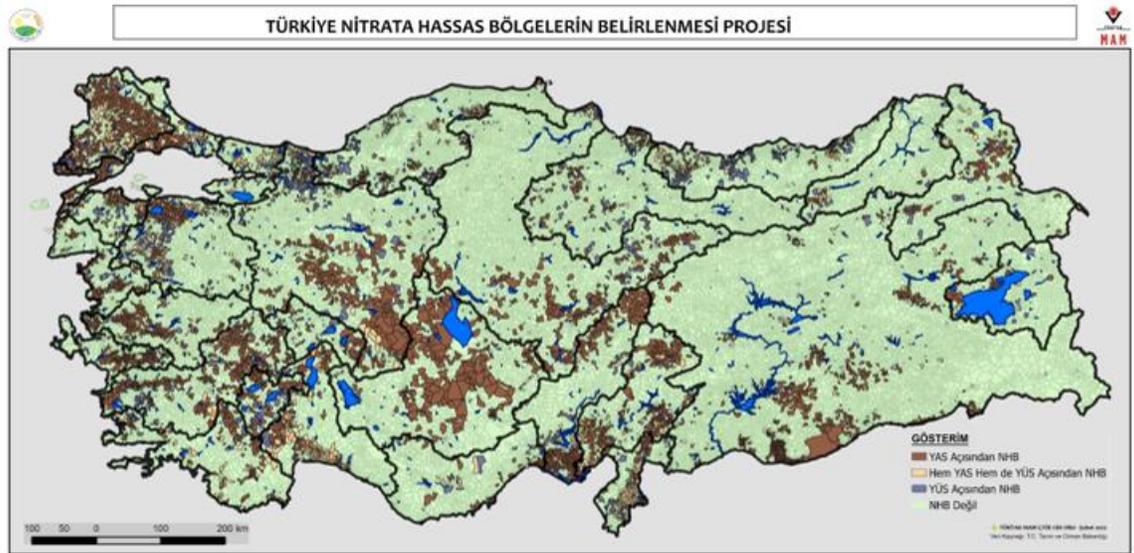
Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## DETERMINATION OF NITRATE VULNERABLE ZONES

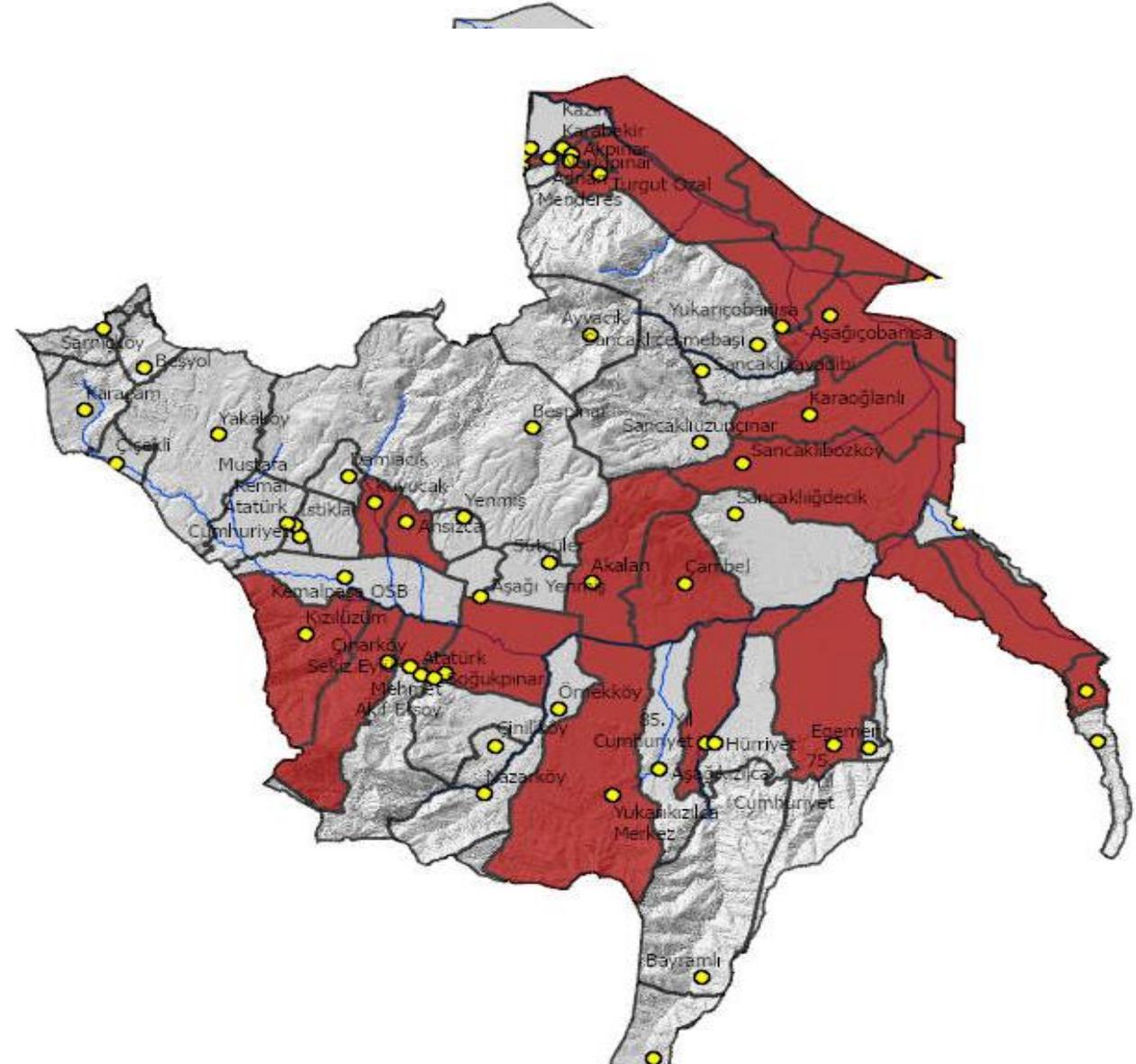
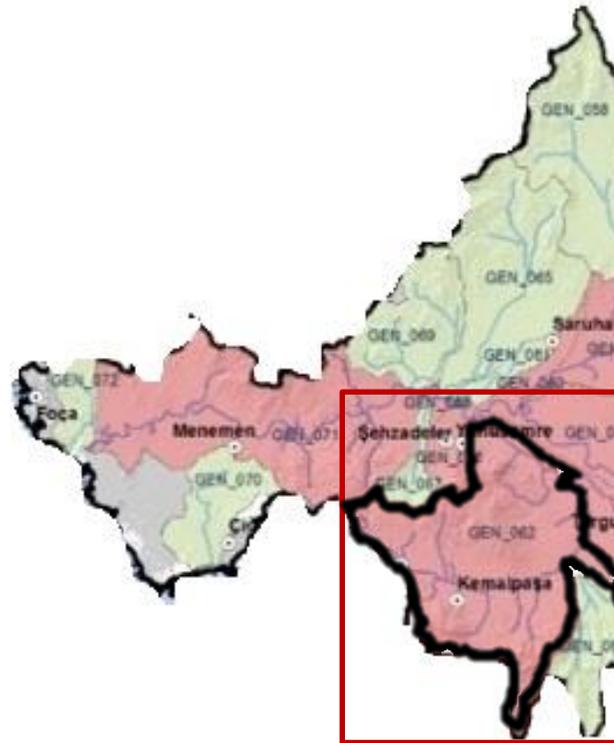
Within the scope of the project carried out with TÜBİTAK MAM, with the work of many experts from different disciplines, in 25 river basins;

- Nitrate Vulnerable Zones (NVB) were determined,
- Nitrate Action Plans to be implemented in NVBs have been prepared
- Benefit/cost analysis of action plans was made

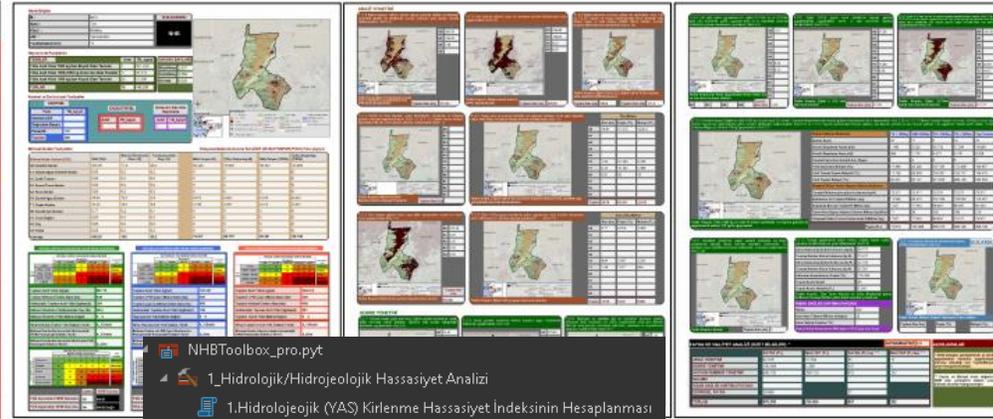
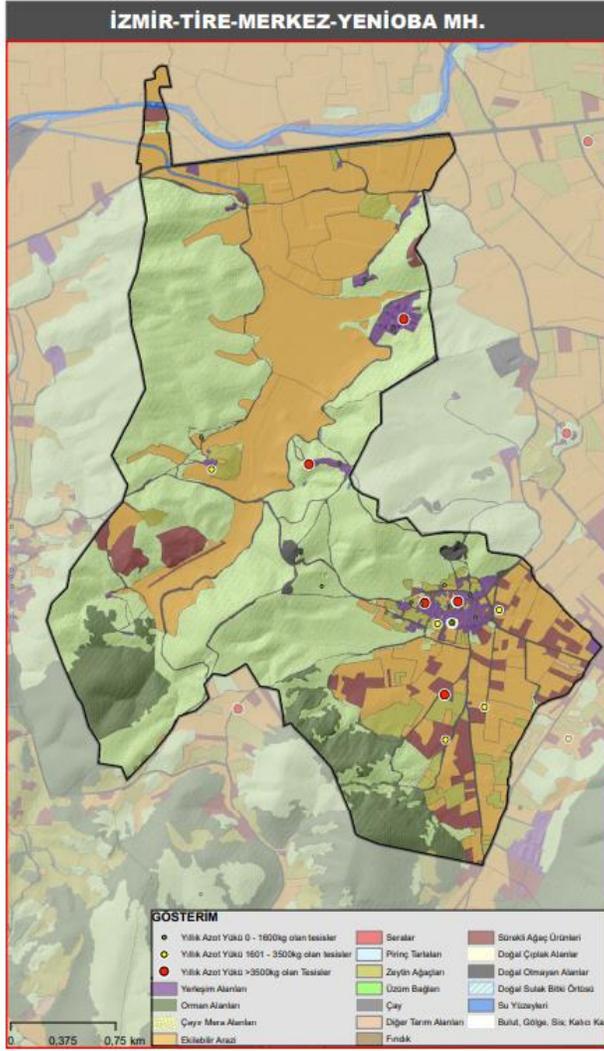
The method created in the Gediz pilot basin in the project was applied in other basins.



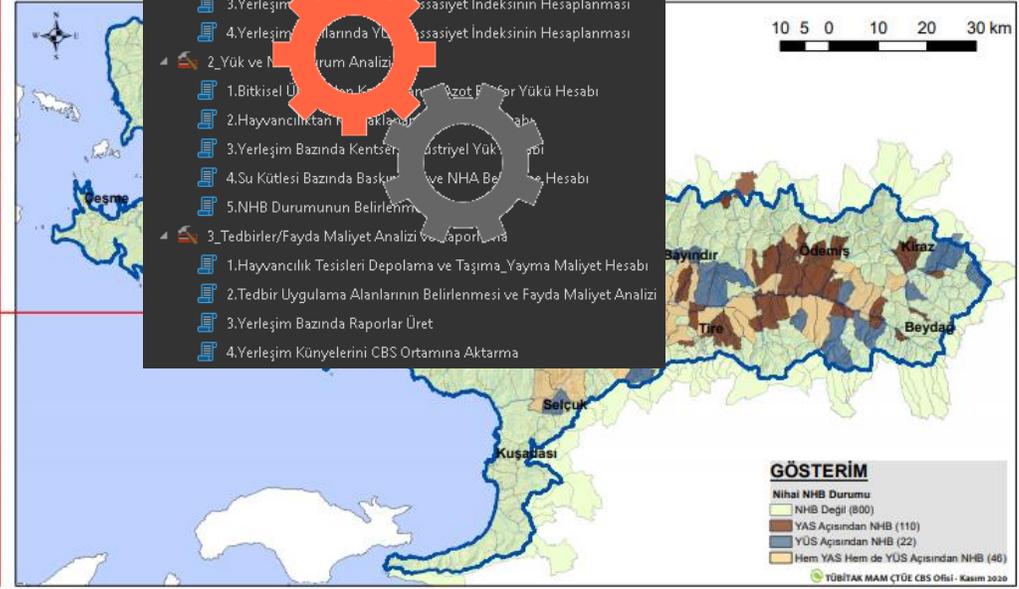
## 20 settlement centers with NVZs



# AN OVERVIEW OF NVZ DETERMINATION METHOD



- NHBToolbox\_pro.pyt
- 1\_Hidrolojik/Hidrojeolojik Hassasiyet Analizi
    - 1.Hidrolojik (YAS) Kirlenme Hassasiyet İndeksinin Hesaplanması
    - 2.Hidrolojik (YÜS) Kirlenme Hassasiyet İndeksinin Hesaplanması
    - 3.Yerleşim Alanlarında YÜS Hassasiyet İndeksinin Hesaplanması
    - 4.Yerleşim Alanlarında YÜS Hassasiyet İndeksinin Hesaplanması
  - 2\_Yük ve Durum Analizi
    - 1.Bitkisel Üretim Kaynakları Azot Fosfor Yükü Hesabı
    - 2.Hayvancılıktan Kaynaklanan Azot Fosfor Yükü Hesabı
    - 3.Yerleşim Bazında Kentsel-İndüstriyel Yükü Hesabı
    - 4.Su Kütleli Bazında Baskın ve NHA Belirleme Hesabı
    - 5.NHB Durumunun Belirlenmesi
  - 3\_Tedbirler/Fayda Maliyet Analizi Raporları
    - 1.Hayvancılık Tesisleri Depolama ve Taşıma\_Yayma Maliyet Hesabı
    - 2.Tedbir Uygulama Alanlarının Belirlenmesi ve Fayda Maliyet Analizi
    - 3.Yerleşim Bazında Raporlar Üret
    - 4.Yerleşim Künyelerini CBS Ortamına Aktarma



**MAM**

40 60 km

**e Hassasiyeti**

**assasiyeti**

**ynaklanan Azot**

**klanan Azot**

**ikü**

**l Azot/Fosfor**

**er**

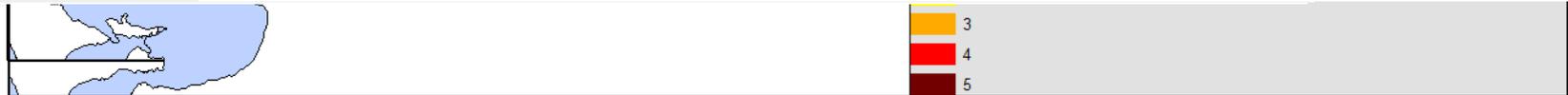
**ve Fayda Maliyet**

CA A3	CA A4
17	32
10	32

**aylı Raporlar**

YÜBİTAK MAM ÇTÜE CBS Ofisi - Mart 2021

Veri Kaynağı: T.C. Tarım ve Orman Bakanlığı



# HYDROLOGICAL POLLUTION SENSITIVITY

## GİRDİLER

NHB Araç Kutusu

ÇIKTI

1. Yerleşim Merkezleri ve İdari Sınırlar

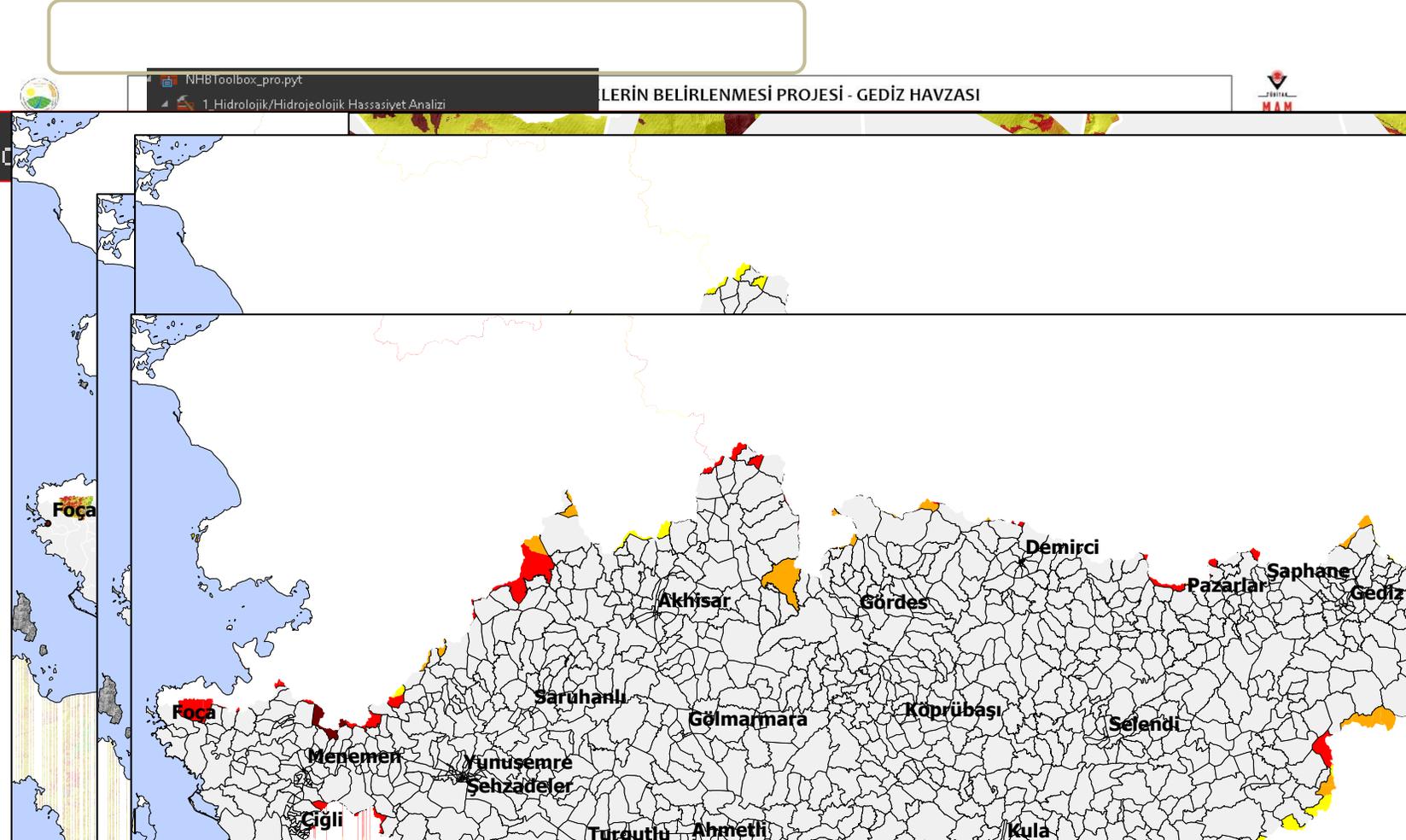
2. Hidrolojik Toprak Grupları

3. Eğim Durumu

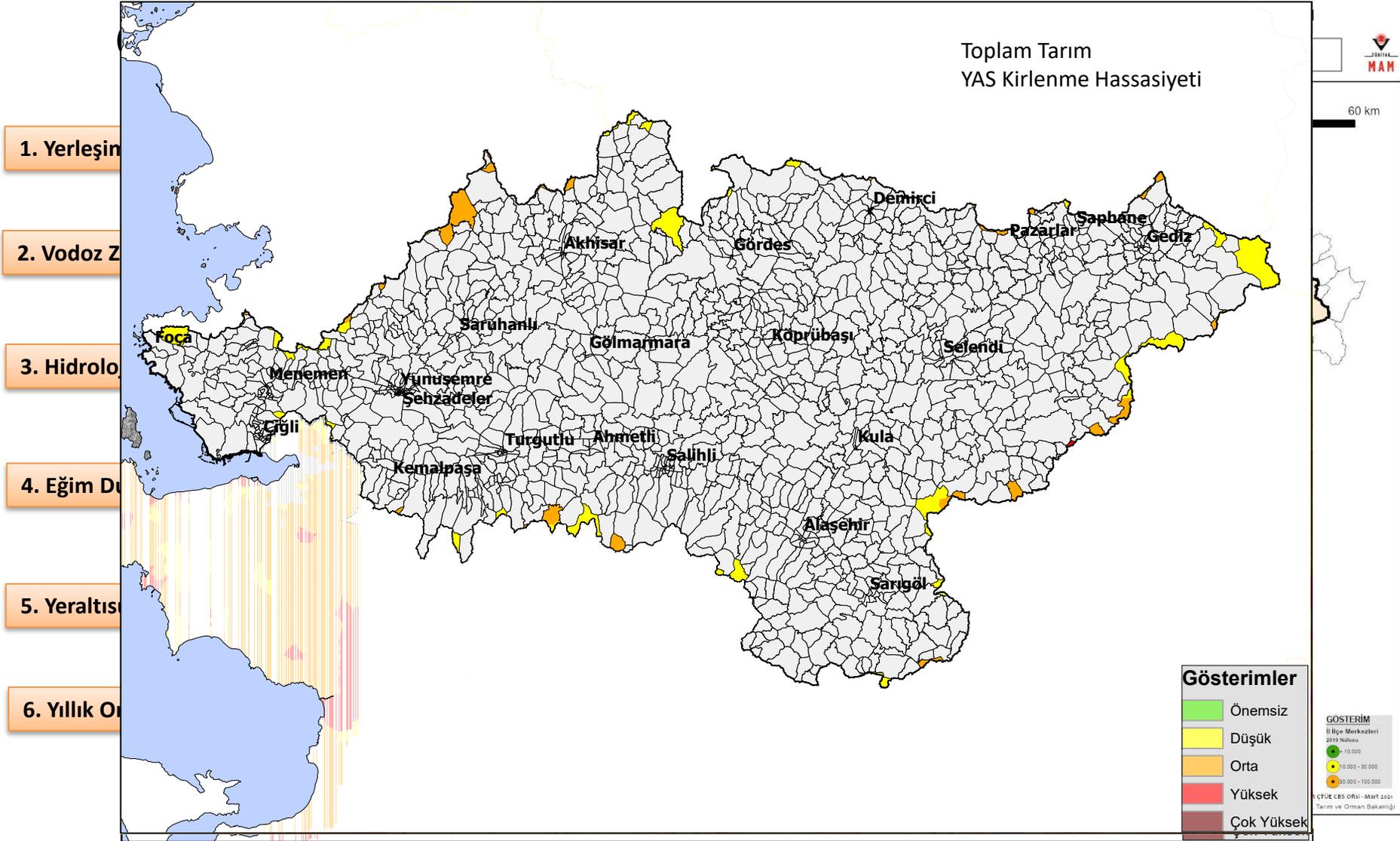
4. Arazi Örtüsü/Arazi Kullanımı (LPIS)

5. Yıllık Ortalama

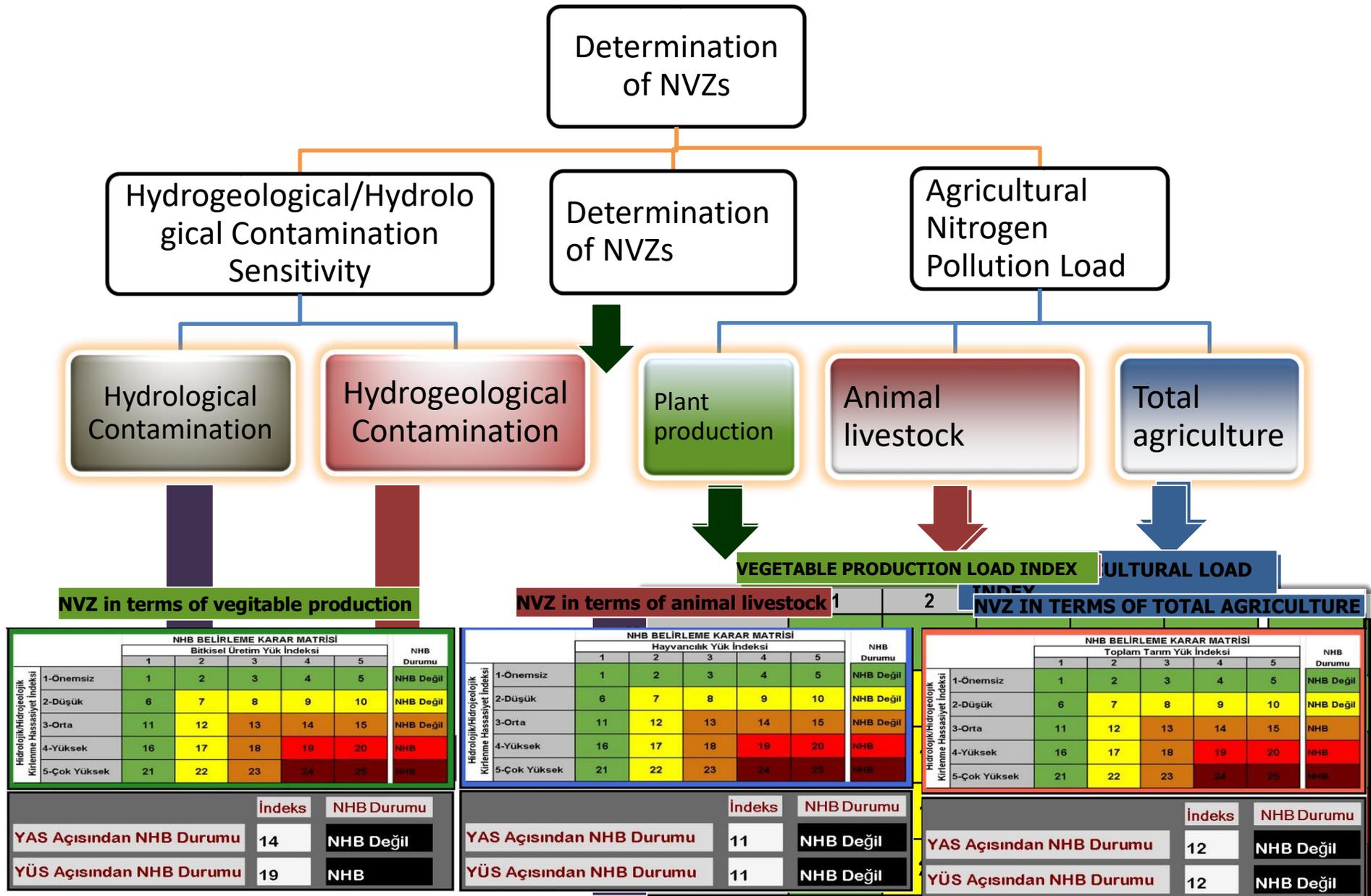
	A Grubu	B Grubu
Eğim:	<2%	2-6%
Orman	0,08	0,11
Çayır	0,14	0,22
Mera	0,15	0,25
Tarım Arazisi	0,14	0,18
Endüstriyel Alan	0,85	0,85
Ticari Alan	0,88	0,88



# HYDROLOGICAL POLLUTION SENSITIVITY

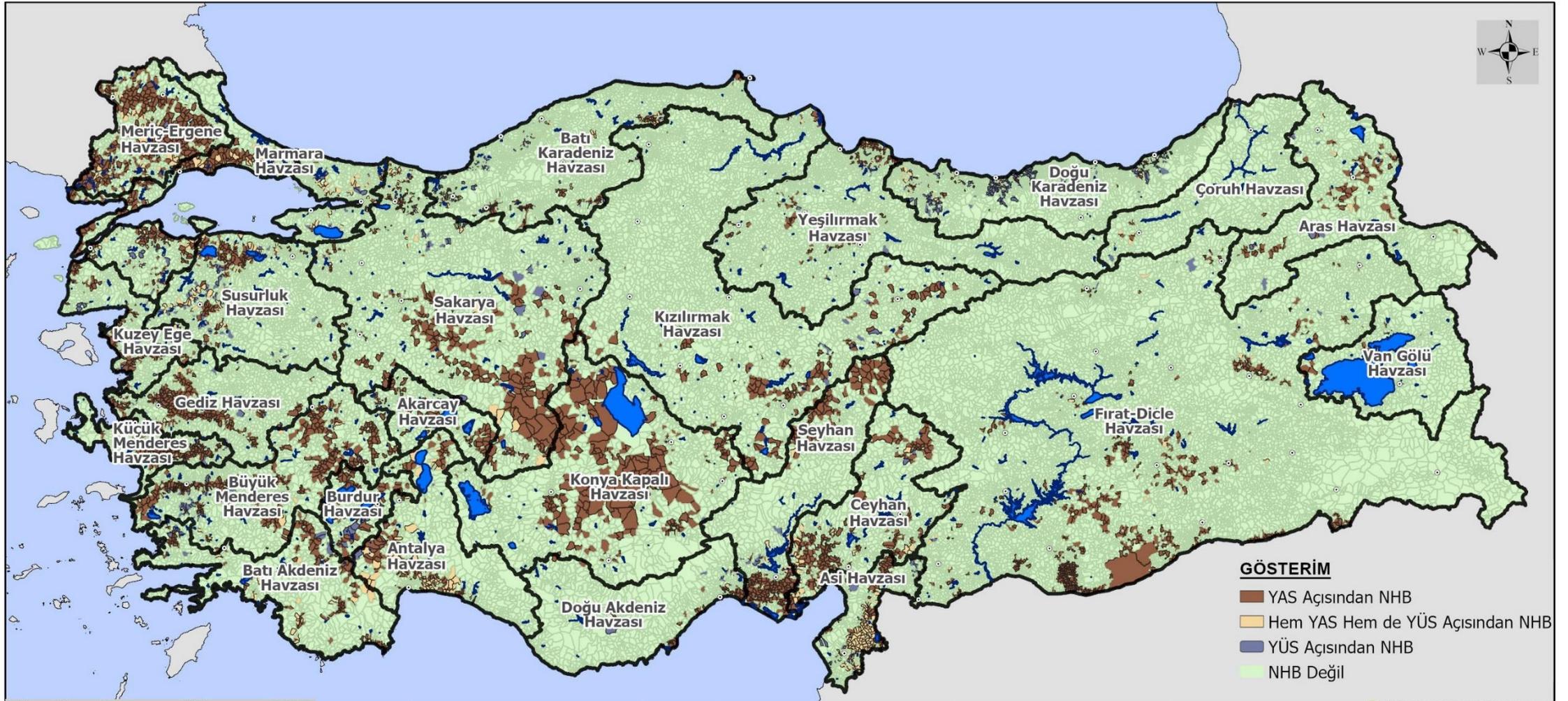


# NVZ DETERMINATION METHOD





# TÜRKİYE NİTRATA HASSAS BÖLGELERİN BELİRLENMESİ PROJESİ



	Number of Settlement	Agricultural field, ha	Number of Livestock Businesses	Number of farms with >1600 kg N/year
25 basin in general	50549	22.674.476,5	3.760.782	221.049
25 basin with NVZ	5499	6.647.538,8	868.583	69.594
NVZ rate in 25 basin,%	10,88	29,32	23,10	31,48



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## NIRATE ACTION PLANS

It includes **measures to prevent nitrate pollution** caused by agricultural activities in nitrate-sensitive areas.

- **The Code of Good Agricultural Practices** was taken as a basis in determining the measures.
- The measures have been determined **based on the settlement.**



# SETTLEMENT-BASED NITRATE SENSITIVE REGION AND NITRATE ACTION PLAN

## Genel Bilgiler

İli :	Manisa	<b>NHB DURUMU</b>  <b>NHB</b>
ilçesi :	Alaşehir	
Köyü :	Merkez	
ADI :	Baklacı Mh.	
Yüzölçümü (km <sup>2</sup> ) :	13	

## Hayvancılık Faaliyetleri

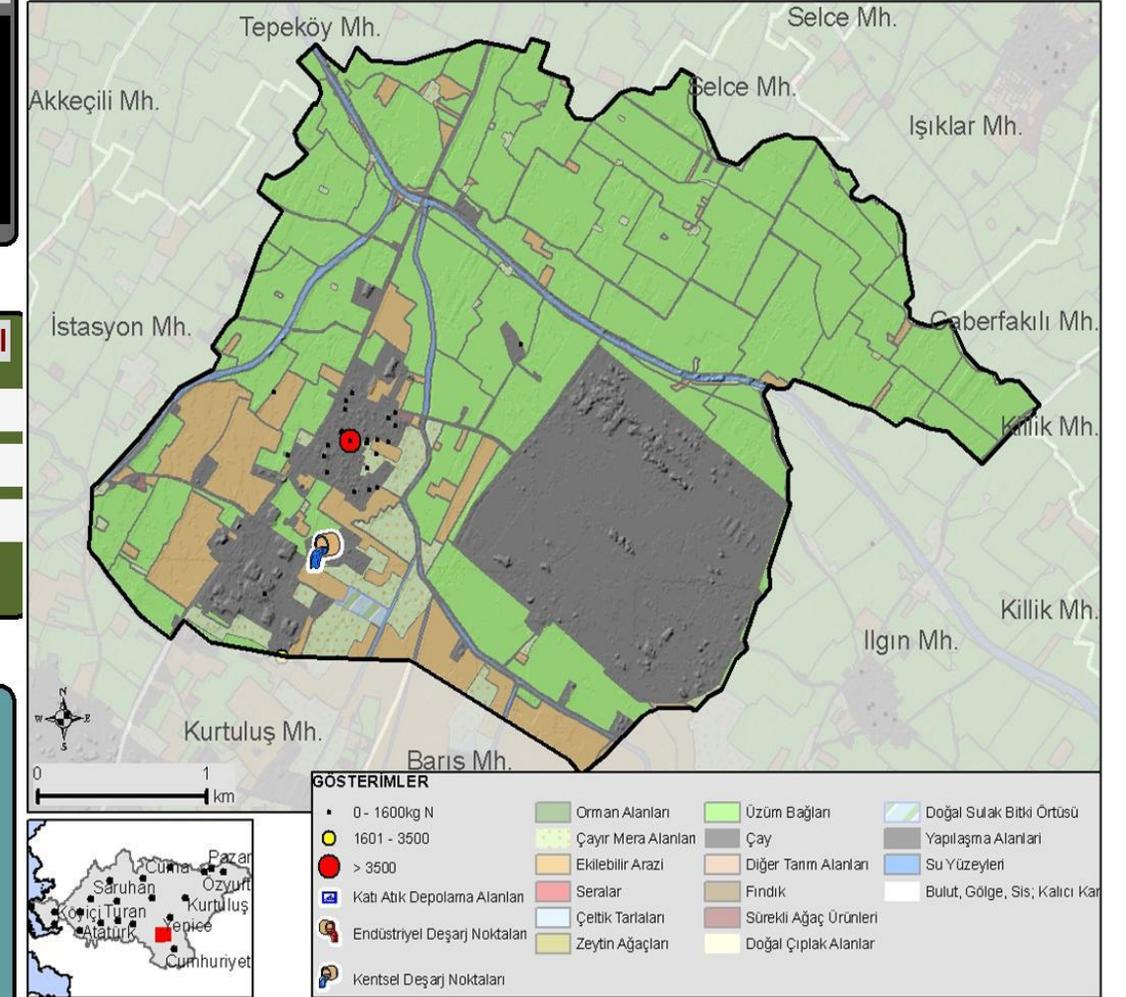
TESİSLER	Adet	TN_kg/yıl	HAYVAN SAYILARI	
Yıllık Azot Yüğü 3500 kg'dan Büyük Olan Tesisler	1	35.063	Büyükbaş	136
Yıllık Azot Yüğü 1600-3500 kg Arasında Olan Tesisler			Küçükbaş	420
Yıllık Azot Yüğü 1600 kg'dan Küçük Olan Tesisler	141	9.710	Kümes	20.625
<b>TOPLAM</b>	<b>142</b>	<b>44.773</b>		

## Kentsel ve Endüstriyel Faaliyetler

KENTSEL		ENDÜSTRİYEL		Düzensiz Katı Atık Depolama	
Türü	TN_kg/yıl	Adet	TN_kg/yıl	Adet	TN_kg/yıl
Kentsel AAT					
Doğrudan Deşarj					
Foseptik	1.323				
<b>Toplam</b>	<b>1.323</b>				

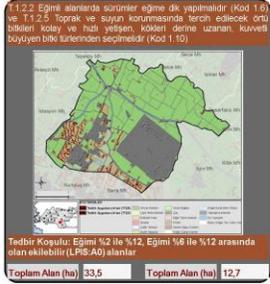
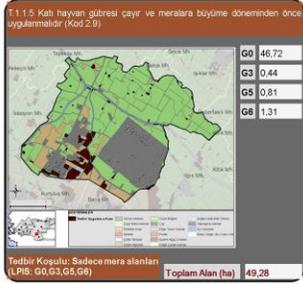
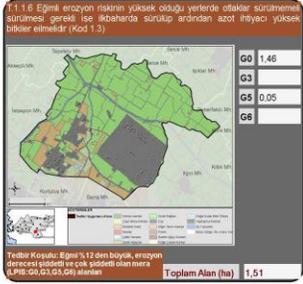
## Bitkisel Üretim Faaliyetleri

Bitkisel Üretim Alanları (LPIS)	Alan (ha)	Bitkisel Üretimdeki Oranı (%)	Yüzölçümündeki Payı (%)	Bitki İhtiyacı (N)	Çiftçi Alışkanlığı (N)	Bitki İhtiyacı (P2O5)	Çiftçi Alışkanlığı (P2O5)
A0: Ekilebilir Alanlar	132,77	15,3	10,4	18.278	23.088	12.506	10.582



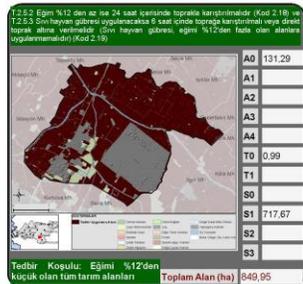
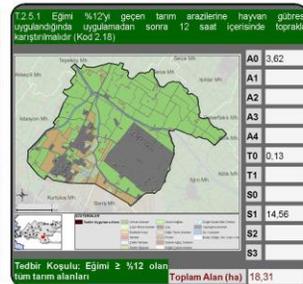
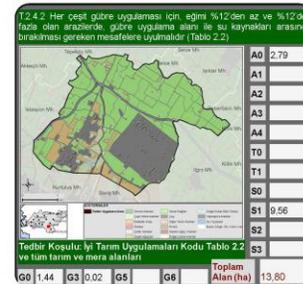
# SETTLEMENT BASED NVZ AND NITRATE ACTION PLANS - VILLAGE CARDS

## ARAZİ YÖNETİMİ



Manisa	
Alaşehir	
Merkez	
Bakırcı Mh	
13	

Adet	TN_kg/yl	HAY
1	35.063	Büyü
141	9.710	Küçü
142	44.773	Kün



Ortu Birkisi

Alan (ha)	Fayda (TL)	Maliyet (TL)	
A0	1,89	5.278	1.448
A1			
A2			
A3			
A4			
T0	0,00	0,00	0,00
T1	0,00	0,00	0,00
S0	1,12	3.122	856
S1			
S2			
S3			
Toplam	3,00	8.400	2.304

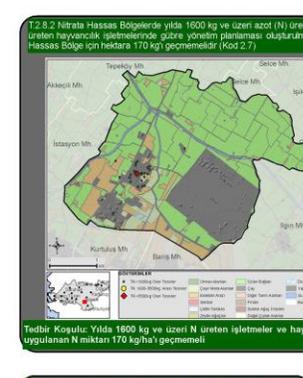
Kalkıcı Ortu Birkisi

Alan (ha)	Fayda (TL)	Maliyet (TL)	
A0	0,84	601	554
A1			
A2			
A3			
A4			
T0	0,02	14	13
T1			
S0	2,55	1.836	1.691
S1			
S2			
S3			
Toplam	3,41	2.452	2.258

FAALİYETLER

TN_kg/yl	Adet	TN_kg/yl	Düzen	De
1.323	0			0
1.323				

Alan (ha)	Bitkisel Üretimdeki Oranı (%)	Yüzölçümü Payı (%)
132,77	15,3	10,4
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
866,13	100	68,1

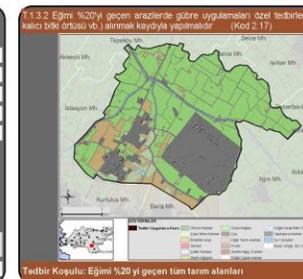
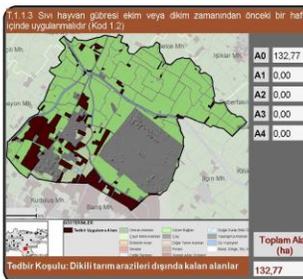


HAYVANCILIK ACISI

Alan (ha)	Bitkisel Üretimdeki Oranı (%)	Yüzölçümü Payı (%)
132,77	15,3	10,4
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
866,13	100	68,1

İNŞAN SAĞLIĞI (ARITMA) FAYDASI

Alan (ha)	Fayda (TL)	Maliyet (TL)
0,84	601	554
0,02	14	13
2,55	1.836	1.691
3,41	2.452	2.258

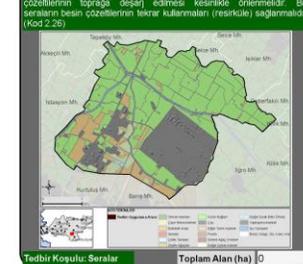


İNŞAN SAĞLIĞI (ARITMA) FAYDASI

Alan (ha)	Fayda (TL)	Maliyet (TL)
0,84	601	554
0,02	14	13
2,55	1.836	1.691
3,41	2.452	2.258

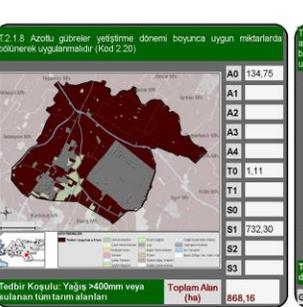
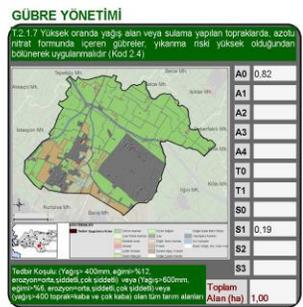
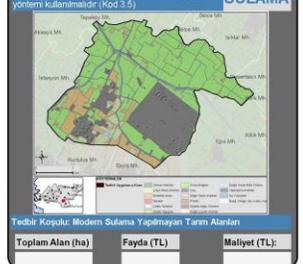
İNŞAN SAĞLIĞI (ARITMA) FAYDASI

Alan (ha)	Fayda (TL)	Maliyet (TL)
0,84	601	554
0,02	14	13
2,55	1.836	1.691
3,41	2.452	2.258



İNŞAN SAĞLIĞI (ARITMA) FAYDASI

Alan (ha)	Fayda (TL)	Maliyet (TL)
0,84	601	554
0,02	14	13
2,55	1.836	1.691
3,41	2.452	2.258



İNŞAN SAĞLIĞI (ARITMA) FAYDASI

Alan (ha)	Fayda (TL)	Maliyet (TL)
0,84	601	554
0,02	14	13
2,55	1.836	1.691
3,41	2.452	2.258

FAYDA VE MALİYET ANALİZİ (ÖZET BİLGİLER) \*

FAZDA (TL)	MALİYET (TL)	FAZDA (TL/ha) **	MALİYET (TL/ha) **
10.852	4.562	9	4
212.693	10.440	167	8
314.221	9.290	247	7
44.409		35	
582.175	24.292	458	19

AYDANLIK ACISI

Alan (ha)	Bitkisel Üretimdeki Oranı (%)	Yüzölçümü Payı (%)
132,77	15,3	10,4
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
0,00	0,0	0,0
866,13	100	68,1

İNŞAN SAĞLIĞI (ARITMA) FAYDASI

Alan (ha)	Fayda (TL)	Maliyet (TL)
0,84	601	554
0,02	14	13
2,55	1.836	1.691
3,41	2.452	2.258

İNŞAN SAĞLIĞI (ARITMA) FAYDASI

Alan (ha)	Fayda (TL)	Maliyet (TL)
0,84	601	554
0,02	14	13
2,55	1.836	1.691
3,41	2.452	2.258



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

## OUR GOAL

**To contribute to the protection and sustainable use of agricultural environment and natural resources within the framework of preventing plant nutrient pollution in waters caused by agricultural activities and adapting to global climate change.**



This project is co-funded by  
the European Union and the Republic of Turkey.

Protection of Waters Against Agricultural Pollution  
Through Establishment of a Monitoring and Reporting Methodology for the Nitrate Action Plans

Thank you..