

*THE AGRICULTURAL  
SYSTEMS TURKEY*

- *The agricultural systems in Turkey are classified according to the climate, specifically according to the natural rain. The amount of rain and distribution to seasons , water under control and water ready for using are the most important factors to apply on field agriculture.*



*There are three different systems in field agriculture in Turkey.*

- *Dry agricultural system*
- *Watery agricultural system*
- *Moistural agricultural system*

- *The most important factor in growing plants is to find water ready in soil in period of planting that is from sowing time to the harvesting time. If the sufficient yearly taken rain amount provides the plants water needs in vejetasyon period, that plant can grow without irrigation. On the other hand, when the rain is in a short time absorbed by the plants and when the plants show that they need water, irrigation is needed for growing the plants.*

# ***Dry Agriculture (Agriculture without irrigation in dry regions)***

- *In regions where there is no possibility for irrigation, this is the type of agriculture that is applied with the use of natural rain. It is a obligatory system in regions where the rain to grow plants is limited. Where the annual rain is around 500 mm or the distribution of rain, among the seasons is irregular, this field cultivation is used without irrigation. In this system, with the application of fallow, the most of the rain water is gathered in the land and plants who use water very economically are planted and this way production is made.*







- *In Turkey, regions where the rain is mostly under 500 mm and where dry cultivation is obligatory have more than 70 % of field cultivation. Because water is little in these regions, the yearly rain is not enough to grow plants yearly.*

- *If there is no irrigation water in Arid Regions that have rain under 300 mm , fields are fallowed to grow plants obligatorily once for two years. In these regions, cool winter climate grains which are resistable against cold and droughty and sowed in the autumn season, are cultivated as the indispensable main product. In these regions, cool winter climate grains- fallow sowing turn system are applied obligatorily.*





- *But with the last studies in Turkey, in the regions where the yearly rain is between 400-500 mm and also in the boundaries of arid and semi-arid regions, proper plants (Vetch, lentil, safflower etc) like cool climate grains that can be sowed in autumn (it is name of this winter sowing in Turkey) are planted. it is determined that enough grain yield can be taken yearly in this way. With sowing of these plants (new lentils, vetch and safflower cultivars) which are resistable against cold and droughty it is possible to grow the plans for years after years . In this way, almost 5 million ha fallowed field is lessened and served for production. Harvesting lentil is done by hands and it is obligotary in Turkey, so it delimitates cultivar of winter grain legumes on the fallowed fields.*



**Fallowing:** is to leave the soil for a temporary period after the tillage and that period is 1 years in Turkey. First years, cool climate cereales is planted, the years after harvesting cool climate cereales at July, the soil is not tillage till next years spring. The first tillage is done in March and April in next years, in the following months when the foreign herbs growing themselves, second and third tillage is done and cool climate cereales are sowed in October - November at the same years of tillage.. So cool climate cereales can be raised in every two years. The aim of the Leaving fields empty after tillage is to accumulate water in the soil by the rain. Rain water can be accumulated in 20% percentage. This is determined by the studies.



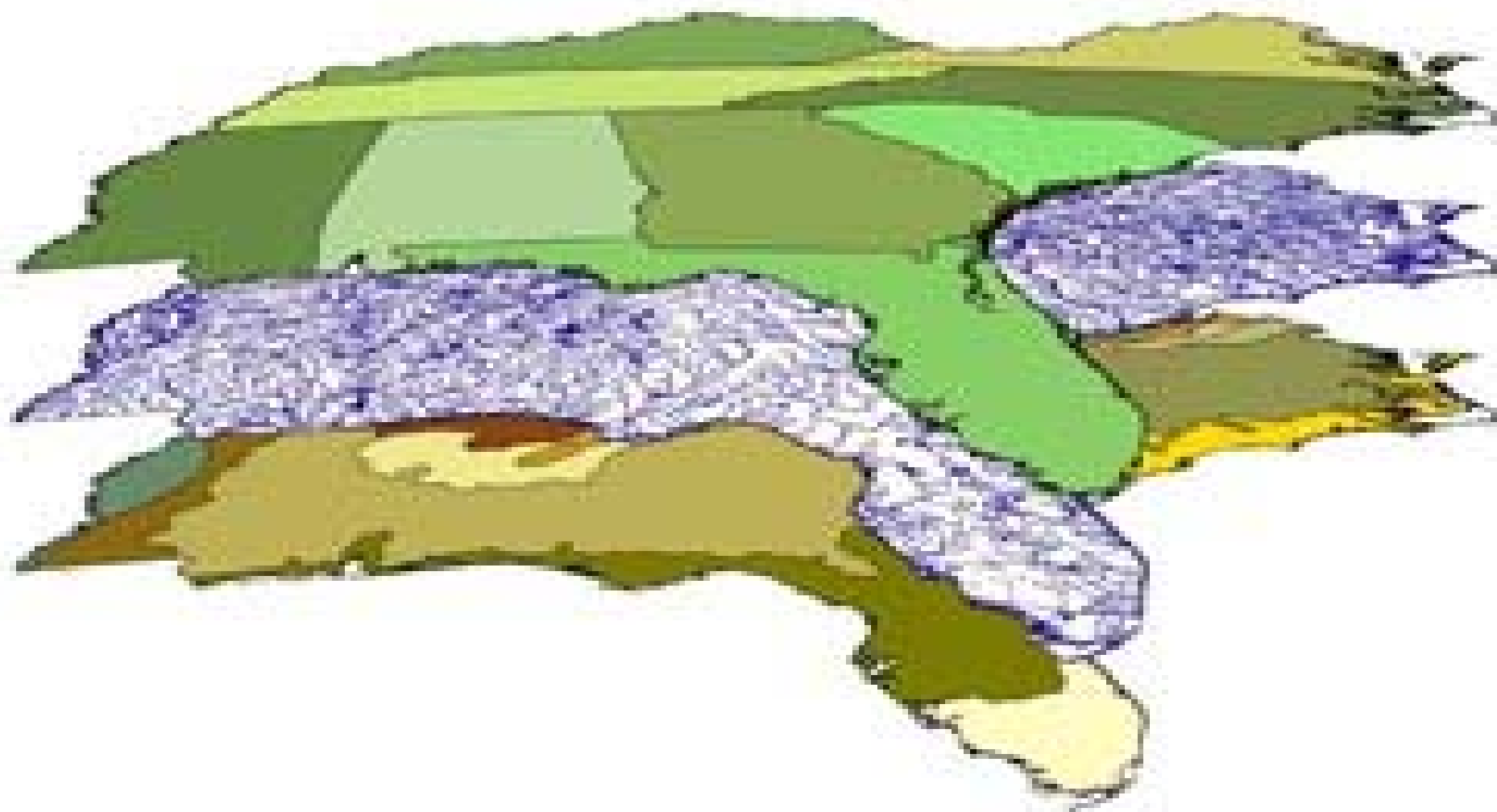




# *Irrigational Farming*

- ***Irrigation:*** *Is to give water for growing plants to the soil when water comes insufficient by the natural ways.*
- *8.5 million ha field is irrigable in Turkey potentially. 2.7 million ha field is still irrigated. When South east Project (GAP) will be completed , 1.7 million ha field will be irrigated completely.*

# SOUTHEAST GAP ANALYSIS PROJECT





Power plants around the world

*Moisty Agriculture (Moisty region,  
agriculture without irrigation)*

- *This is the agricultural system in ecological regions where the amount annual rain exceeds the annual evaporation and where the amount of water in the ground is high. Because there is enough or even too much water, there is no need for irrigation. The problem of these regions is to remove the excess water from the ground (drainage), because the amount of annual rain is more than 1250 mm. The region of Easth Black Sea has the suitable climate conditions for moist agriculture. Because of excess water in this region, the nutritional materials for plants is easily washed and the soil is poor day by day.*







- *The quick being washed of materials like Ca and Mg , causes the acidity soil. The soil structure is disrupted, the soil becomes single grain structure (the soil has very little soil texture) and the cultivation of cultivated plants becomes harder. The drainage of excess water from the soil, the ventilation of the soil with deep tillage with furrow plow **making upside** , the regaining of washed nutritional materials as fertilizers in the soil are important matters.*



- *Because of the fact that the land of the Black Sea region, and especially the East Black Sea region is very sloping, perennial tea, which is mostly suitable for this ecology, is cultivated instead of annual field crops. We know that tea wants moisty climates and grows in soil that has acidic characteristics. Besides this, field crops like corn and bean are cultivated, without irrigation, on fields that are not that much sloping. Furthermore, corn and bean is cultivated together. The corn plant, that is cultivated with bean cultivation, fulfills the task of being a support to the bean that is grown like a pole right next to it. This way, by cultivating the corn and the bean together, can obtain crops from the unit area the best way they can.*

# ***Following***

- *Following is to leave the soil void for a period after tillage. Following the soil has different aims. The first of the aims is to accumulate the following years rain in the soil for using to grow next years plant. Studies shows that % 15-20 percentage of total following years rain ,can be accumulated for next years. This means 80-100 mm. water for the regions that has under 500 mm yearly rain.*
- *The second aim is to convert the unuseful nutritious materials and parts of the plant stems in the soil to useful materials for plants.*





# **Black Fallowing**

- *While making black fallowing in Turkey, time for first tillage changes from region to region. First tillage is done in March- April in black fallowing with furrow plow **making upside** . The other tillage goes on till October while the soil is invaded by the herbs .First tillage is done with the furrow plow with 15-20 cm depth. With furrow plow **making upside** in spring when the herbs spreads on 2/3 of the field. Tillage on the surface of field like second and third is done when spreading of herbs continues with harrow at 8-10 cm deep making upside. The soil can not accumulate water and even lose the water in the tillage deep, when tillage of the soil is done turn under very often with harrow. Unfortunately this is a traditional wrong way for storage in the soil and making fallow in Turkey. Black fallow should be given up in Turkey.*







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## ***The Fallow With Stubble***

- *In this type of fallowing, tillage is done under the soil without making upside and down with . The dregs on the soil is left on the land as they exist. First tillage is done after winter in early spring (End of March - beginning of April) like Black Fallowing. First tillage in the fallow with stubble is done with **Chisel Plough** which fulfills ploughing without making upside and down.*



- ***Chisel Plough***, *Chisel can work in heavy conditions and booming the soil. Chisel doesnt subvert the soil , it lowers to decompose the organic materials. Processing the soil deeply. Chisel keep the humidity soil on deep. The regaining plant wastes and stubble on surface soil area prepares an efficient planty surface area that also protects for soil erosion and keeps the humidity inside the soil.*



- *After this first tillage, Second and third tillage is done with rigid cultivator, semi- spring cultivator, Spring cultivator, tiller heavy type double coil spring cultivator, 'S' tine spring cultivator or crowbar type cultivator when the field gets herbs.*





- *This tools are an secondary soil preparation combination. This cultivators prepares the soil for sowing, after the soil was processed by the traditional plough or chisel plough equipments.especially 'S' tines vibrates vertically and horizontally during process on soil that splitting and mixing the clods. This process keeps the oxgen and minerals on soil that rizes efficiency, productivity and keeps the humidity of the soil. The roller combination behind the 'S' tines destroys the clods , reduces soil surface area, Strengthned 'S' tines can work under heavy conditions and this combination equipment can do different several machines work by it self.*

- *At this type soil tillage the surface of the soil has plant Stubble.*
- *The Stubble, surface on the soil keep the water in the soil. The evaporation of water in the soil keep by the stubble on the soil. The water accumulate in the soil and after fallow the cool climate grains use the accumulate water from in the soil when they grow on the soil. This type fallow is good for arid and semi arid region in Turkey.*



# *Sowing Turn ( Or Rotation ) in Turkey*

- *Sowing turn in Turkey is vary each region.*
- *Cool winter climate grains- fallow – chicpea – fallow - safflower - lentil sowing turn system apply without any irrigation at Arid and semi arid region ( Middle north, middle east, middle south ) . If there is irrigation water in arid and semi arid region , sugar beet, cool climate grain, maize, sunflower, grain legume, potato ,some vegetables like tomato are cultivated.*
- *Sunflower - cool season grain, chicpea, canola, peas, broad bean sowing turn system apply if there is no irrigation water at Marmara region. Maize – sugar beet- soya bean- peas, potato , dry bean, some vegetables like tomato , eggplant - pepper, cauliflower, sowing turn system apply if there is irrigation water at Marmara region. This region has very large peach tree and olive tree area .*













- *Sunflower-cool season grain, chickpea, canola, peas, broad bean, sowing turn system apply if there is no irrigation water at Egean region. This region has very large Ginkgo tree, grapes and olive-tree area.*
- *Maize – sugar beet- soya bean- cotton, sesame, linen, peas, potato, dry bean, some vegetables like tomato, eggplant- pepper, cauliflower sowing turn system apply if there is irrigation water at Egean region.*



# Grapes





*Gig tree*





# Olive





- *Sunflower-cool season grain, chickpea, peas, broad bean, sowing turn system apply if there is no irrigation water at Mediterranean region.*
- *Maize – sugar beet- soya bean- cotton, sesame, linen, peas, potato, dry bean, some vegetables like tomato, eggplant- pepper, cauliflower sowing turn system apply if there is irrigation water at Mediterranean region. And this region has very large Citrus and olive-tree area.*



Orange

Mandarin







- *Cool winter climate grains- fallow - lentil- fallow- chickpea sowing turn system apply without any irrigation at Arid and semi arid region in southeast region if there is no irrigation water.*
- *Maize – sugar beet- soya bean- cotton, susame, linen, ,potato ,dry bean, some vegetables like tomato , eggplant- pepper, cauliflower sowing turn system apply if there is irrigation water at southeast region. And this region has very large pistachio tree and olive-tree area .*





# *Pistachios*



- *Cool climate grains- lentil –cool climate grains sowing turn system apply without any irrigation at Northeast region if there is no irrigation water.*
- *Sugar beet- potato ,dry bean, sowing turn system apply if there is irrigation water at Northeast Region . This region has very large meadow and grasslands area. Because of the cold weather and there is not enough vegetation time and temperature for growing warm climate plants. Warm climate plants can not cultivated at this region.*



- *Maize, Sunflower - cool season grain - dry bean, soya bean, peas, broad bean, potato sowing turn system apply if there is no irrigation water at Black Sea region. This region has enough rain for growing this plant without irrigation. Some little area in this black sea region sugar beet needs little irrigation water. And this region has very large tea plant, nut crops area, because the weather of Black Sea is very suitable for this tea plant and nutcrops.*





# *Nut crops*





*There is different factors for sowing turn any region like this :*

- *The weather conditions*
- *The soil structure*
- *Rain amount or irrigation possibility*
- *The typ of plant*
- *The existence of he herbs, diseases, insects at this region.*
- *Transport, storage and marketing as well as economic conditions*

# ***The Benefits of Sowing Turn (Rotation)***

*The sowing turn (Rotation ) is growing different plants respectively the same field.*

*Benefits of the sowing turn like this:*

- ***Nutritious elements in the soil can be used more properly.***
- ***Soil flourishes in nitrogen amount.***
- ***Organic element amount increases in the soil.***

- ***Fertilizers gives more performance. Fertilizers can be used in better performance.***
- ***Erosion decreases.***
- ***Foreign plants (crabgrass) can be controlled.***
- ***Diseases and insects can be controlled.***
- ***Workforce can be very useful***
- ***Using workforce and yearly distribution of workforce becomes proper.***