TURKISH TEA

Keziban YAZICI[1], Oğuz Can TURGAY[2]

[1]Application and Research Center of Tea and Tea Products, Recep Tayyip Erdogan University, Rize, Turkey
[2]Ankara University, Faculty of Agriculture, Department of Soil Science and Plant Nutrition, Ankara, Turkey

1. INTRODUCTION

Turkey is a Eurasian country that stretches across both the Anatolian peninsula in western Asia and Thrace in the Balkan region of southeastern Europe, geographically connecting Europe, Central Asia, the Middle East and the Mediterranean. Thanks to this extraordinary location, the lands of Turkey have been the homeland of many different civilizations such as Hittite, Lydian, Lycian, Ionian, Phoenician, Troyan, Roman, Byzantine, Seljuk and Ottoman civilizations for the last 4000 years. As such, it has gained great historical, cultural and social diversity. Turkey has an almost rectangular shape with a total land area of 783 577 km2, surrounded by Georgia, Armenia, Azerbaijan and Iran to the east, Iraq, Syria and the Mediterranean Sea to the south, the Aegean Sea to the West, Greece and Bulgaria to the north west and the Black Sea to the north (Fig 1).

Figure 1. Turkey, seven geographical regions (small map shown in lower left side of the big map) and neighbouring countries (http://guidemap.tk)

Thanks to its great variety in geomorphology, topography and climate, Turkey has a large diversity of natural and agricultural habitats (Fig 2) hosting many different plant species and a large endemism. Approximately 3,900 out of the 12,000 plant species are known as endemic and this feature more or less results in about 75% of the plant species that occur in Europe naturally occuring in Turkey. Turkey consists of three distinct biogeographic regions, each with its own endemic species and natural ecosystems. The Euro-Siberian region includes Caucasian mountain forests with temperate deciduous forest and alpine meadows; the Irano-Turanian region, Central and Eastern Anatolian steppe grasslands; and the Mediterranean region (including the Aegean Coastal region), the world's largest remaining Cypress forests. Aegean Turkey and the drylands in central and northern Anatolia are particularly rich in landraces of wheat, emmer and barley varieties, chestnuts, sesame, thyme, grapes

and pomegranate. These crops are globally important and also essential for national food requirements and dietary health. The steppe ecosystem is perhaps the most important of all from the point of view of economics, as a large number of food crops have been derived from their wild relatives native to Turkey. The global significance of Turkey's biodiversity is actually associated with a unique crop, the tea plant, which is one of the most popular non-alcoholic and healthy beverages, contributing massive wealth and business opportunities to 52 tea cultivating countries around the world. More than 50% of the world population is known to consume tea by a rate of 3 billion cups daily. As the fifth largest tea producing country following China, India, Kenya, and Sri Lanka, Turkey has a remarkable contribution to world tea production.

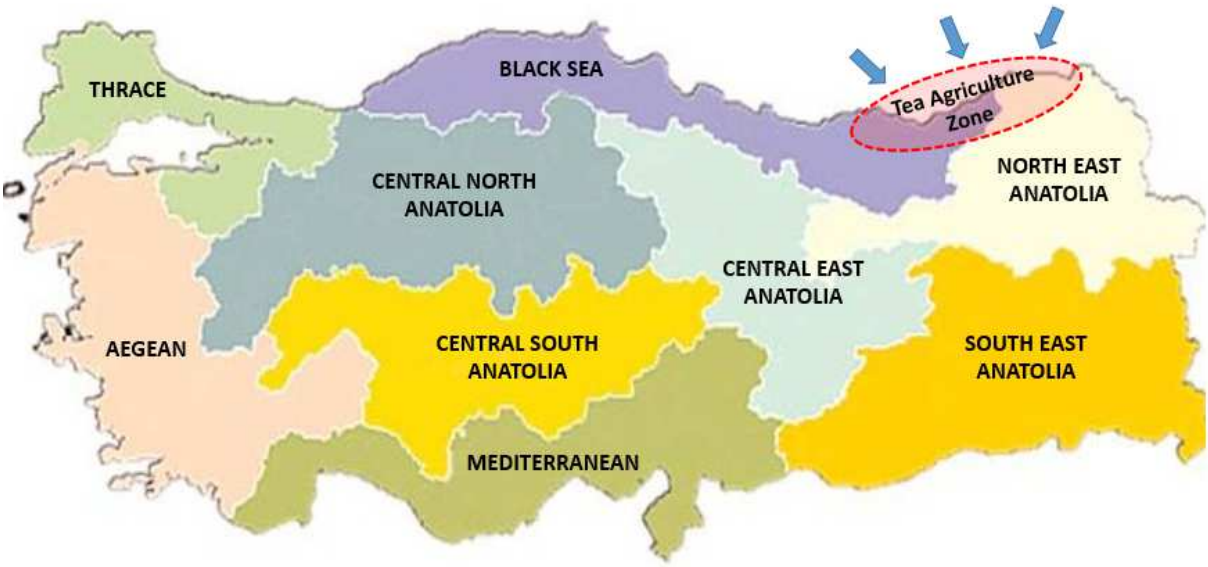

Figure 2. Agricultural zones of Turkey including tea agriculture zone (shown as striped red circle in upper right side of the map) (adopted from https://repository.cimmyt.org/xmlui/bitstream/handle/10883/1085/93667.pdf)

2. TEA AGRICULTURE IN TURKEY

Agriculture and the agro-industry are the most significant components of national income sources that affect socio-economic development in Turkey. In this sense, tea (Camellia sinensis L.) is of important value to Turkish agriculture, creating huge social, economic and environmental dimensions for the Eastern Black Sea Region (Fig 2). Though the nation produces black, white and green tea, Turkish tea agriculture is dominated by black tea production (more than 95%). Tea is usually harvested three times (during May, June and September) a year but, interestingly, the harvest period can be extended to four times (during October and November) depending on ecological conditions of the East Black Sea Region. The largest tea cultivating province is Rize (65%), followed by Trabzon(21%) and Artvin (11%) and other provinces such as Ordu and Giresun (3%). Approximately 205,000 farmers are producing tea on 83,500 ha of plantation in Eastern Black Sea Turkey. Turkish tea agriculture is largely based on small scale family business i.e. 80% of tea farmers produce tea on lands smaller than 0.5 ha. Total tea production has increased from 1.33 to 1.45 million tons over the last five years. There are a total of 276 factories actively operating in the Turkish Tea Sector, 47 of which belong to the government (ÇAYKUR) and 229 to the private sector. Despite the gap between tea manufacturing infrastructures when comparing governmental and private sectors, it is interesting that the tea leaf processing capacity of ÇAYKUR (9,020 tons per day) is nearly the same as that of the private sector (10,000 tons per day). ÇAYKUR, General Directorate of Tea Enterprises, is the leading governmental foundation of the Turkish tea sector. The majority of tea farmers traditionally work with ÇAYKUR i.e 55-60% of the wet tea leaf produced in the Eastern Black Sea region is purchased from the farmers by ÇAYKUR whose domestic market share is approximately 60-65%.

2.1 History of Turkish Tea

The history of Turkish tea agriculture begins with the tea plantation work of Ali Riza Erten and Zihni Derin who imported tea seed from Batumi, Georgia repeatedly between the year 1937 and 1940 (Fig 3).

Figure 3. Two great people introducing tea to Turkish Agriculture (photographs, ÇAYKUR photo-arciheve)

By issuing the first Tea Law in 1940, tea cultivation was officially assured and the tea orchard establishment was subjected to license, bringing a rapid expansion in Turkish tea agriculture. The government curbed tea export and sales activities with the first tea monopoly law made in 1942. The purchasing, processing, packaging and marketing of fresh tea leaves had begun to be regulated by the Agricultural Affairs Authority in 1946. Processing 60 tons of tea per day, the first tea factory of Turkey was established in the Rize province in 1947. For decades now, tea agriculture has been supported and encouraged by the government in order to increase tea production and develop the socioeconomic conditions of the Eastern Black Sea Region. When gross tea production reached the level of the annual country consumption in the 1960s, governmental incentives on tea production and tea import activities were reduced. In order to increase the social and economic effectiveness of Turkish tea agriculture, a tea institution law was enacted in 1971 and all responsibilities related to national tea production were transferred to ÇAYKUR, which acted as a tea monopoly between 1973 and 1984. However, in 1984, tea business was released from governmental pressure by abolition of ÇAYKUR's monopoly and, from then on,all citizen and legal persons have been able to establish tea processing and packaging facilities and wet tea leaf directly from the producers. Today, tea has become a valuable and strategic agricultural product significantly supporting the socio-economy of the Eastern Black Sea Region and Turkey thanks to this political perspective (Fig 4).

Nearly all tea produced in Turkey is consumed in the domestic market and the tea export business is unfortunately smaller than expected. This is because the high production costs of Turkish tea cannot compete sufficiently with those of other tea producing and exporting countries where labor and raw material costs are much lower than in Turkey.

However, there has been a significant increase in both tea export and import activities in recent years. Growing public interest in foreign tea is partly related to the trends in the distinctive tastes and aromas of different kinds of teas and reasonable prices.

Figure 4. Tea harvesting local women in traditional clothes (ÇAYKUR photo-archieve)

2.2 Challanges and Advantages in Turkish Tea Production

Thanks to its peculiar microclimate characteristics, Turkey is considered to be one of the rare countries that has been able to produce large amounts of tea (without using pesticides) in a narrow land area since the 1940s. On the other hand, like all other tea sectors in other countries, the Turkish tea sector has been faced with several challenges for the last few decades such as (i) decreasing tea quality and productivity due to the senility of tea plantations; (ii) seed-based tea plantations causing fluctuations in tea yield and quality (iii) soil degradation due to intensive use of synthetic chemical fertilizers and (iv) limited agricultural mechanization due to low applicability of agricultural equipment and machineries in hilly and sloping tea lands (Fig 5).

Figure 5. Slopy tea lands in Rize Province (ÇAYKUR photo-archieve)

However, it should be emphasized that there is considerable public and scientific attention dedicated to finding solutions to these difficulties. The Tea Specialization Coordinatorship of Recep

Tayyip Erdogan University (RTEU) carries out projects on the improvement of tea quality such as: the development of new tea varieties, machine farming in tea cultivation, the health effects of tea, sustainable soil management in tea orchards, post harvest technologies, and branding and marketing of Turkish tea. In addition to the Tea Specialization Coordinatorship, the Applied Research Center for Tea and Tea Products of RTEU, Ataturk Tea and Horticultural Research Institute of ÇAYKUR and the Tea Research Center of Rize Commodity Exchange (CAYMER) are among other leading institutions responsible for the modernization of Turkish tea agriculture towards more sustainable tea production and increasing competitiveness of Turkish tea in the domestic and international tea market (Fig 6).

Figure 6. A modern tea orchard from Rize region (ÇAYKUR photo-archieve)

For example, replacement of old tea fields with new tea plantations is generally considered to be an efficient strategy to improve tea quality and productivity, requiring exploration of indigenous tea clones of high quality. Therefore, an extensive research project to create effective tea gene pools and to determine commercial tea variety candidates is currently being conducted within the cooperation between RTEU and ÇAYKUR with the financial support of the Turkish Scientific and Technical Research Institute (TUBITAK).

Nowadays, agricultural mechanization is a prerequisite for high capacity and quality production in many agricultural countries.It can be said that agricultural mechanization in Turkish tea production has unfortunately been limited, because of both (i) high plant density with no inter-row and intra-row spacings and (ii) high slope, hampering utilization of modern tools and equipment for pruning, harvesting and tillage activities in the majority of tea lands in Black Sea Turkey. Therefore, to facilitate better soil cultivation and tea production especially in newly established or renewed tea plantations, RTEU has recently initiated a joint project, “mechanization in tea plantations”, with ÇAYKUR. It is expected to assist Turkish tea farmers in better understanding the benefits of automated tea production technologies.

Another important action undertaken for the improvement of Turkish tea quality and productivity is encouraging tea farmers to adopt sustainable management practices to cease soil acidification and improve soil fertility. In this regard, ÇAYKUR launched an “organic tea agriculture” program in selected sub-regions of the Rize Province and established an organic tea factory in the Hemşin district in 2007. Thanks to this initiative, today 12,000 farmers are producing organic tea on an area of approximately 38,000 decares. Large amounts of waste biomass (waste tea leafs, fiber and dust etc.) occurring during black tea production and processing activity are now encouraged to be used as soil conditioning material. As important inputs of organic soil management, use of soil conditioners and biofertilizers may be appropriate practices to replace and reduce use of chemical fertilizers for

improving soil health and tea yield and quality. In a recent project supported by TUBITAK, a joint research team of ÇAYKUR and Ankara University (AU), applied to acidic tea soils an experimental biofertilizer (consisting of tea waste biochar carrying phosphate solubilizing bacteria isolated from tea lands of Black Sea Turkey) (Fig 7). The results showed significant improvements in both soil characteristics (pH, available phosphorus and soil enzyme activities) and tea quality parameters (total tiller length and diameter, leaf chlorophyll and anthocyanin) under biofertilizer treatment.

It is unique that Turkish tea production is a pest-free agricultural activity due to the natural characteristics of Eastern Black Sea Turkey (i.e. climate conditions do not let pests and disease invade tea lands). This is a great advantage for Turkey in organic tea production.

Figure 7. Experimental tea orchard of ÇAYKUR Ataturk Tea Research Institute (a) and application of phospahate solubilizing bacteria-biochar (b)

2.3 Cultural Aspects of Turksh Tea

Tea is more than just a hot drink to Turkish People. It is actually a living culture with a rich content of historical, cultural and traditional codes in Turkish society (Fig 8). The ethnographic structure of Turkish tea contains many interesting features such as traditional tea brewing, tea houses, tea gardens, tea ceremonies and parties.

Figure 8. Turkey means tea and tea means Turkey (Photographs from Turkish National Tea Council)

Traditionally Turkish tea is brewed using a samovar (self-brewer), which is a metal container usually crafted out of plain iron, copper, polished brass or bronze and is used to heat and boil water. The historical roots of samovar go back to the 17th century in Central Asia. Samovar can be in the shape of an urn, cylinder, krater, barrel, or sphere and consist of a large metal container with a tap near the bottom and a metal pipe running vertically through the middle. The pipe is filled with coal or kindling which is ignited to heat the water in the surrounding container. When the water boils, the fire is extinguished and a teapot is placed on top to keep warm above the rising hot air. The teapot is used to brew a strong concentrate of tea and served by diluting this concentrate with boiled water from the main container.

Although traditional samovar is still widely enjoyed by Turkish people and tourists visiting public tea houses and tea gardens around Turkey, one can say that samovar has been largely replaced by the teapot during the last few decades. Modern Turkish people generally brew tea using a teapot set that includes two separate teapots, one of which is bigger and used to boil water and a smaller one generally placed on top to brew tea. Turkish tea is traditionally offered as a mixture of brewed tea (1/3) and hot water (2/3) in a small tulip-shaped glass, yet another unique object of Turkish tea culture, and is held by the rim to protect fingers from the heat (Fig 9).

Figure 9. An ancient tea samovar (Tuncer Mankır, antique collector, Köyceğiz City, Mediterranean Turkey) (a); modern tea pot with Istanbul view (b); traditional tulip-shaped tea glass (c); and common tea boiler system for tea rooms and houses (d), (İlker Sürül, tea boiler master, Samsun City, Black Sea Turkey)

In most world cultures, tea is a common household beverage and also served in public places like cafes and restaurants. However, in tea countries, tea ceremonies are essential parts of the cultural tradition and are regarded as a relational metaphor showing the connection between the tea ceremony host and their guest. The tea ceremony is usually an artistic and esthetic performance in Asian countries like China, Japan Korea and Taiwan. Unlike these cultures, in Turkey, drinking tea is a means of coming together and socializing as parents or in friend groups. This perfectly explains the existence of special places i.e. “çayhane” (indoor or outdoor tea rooms), “çay ocağı” (teashops) and “çay bahçesi” (outdoor tea houses with a garden) in Turkish tea culture. The history of tea rooms and

houses dates back to the Ottoman period. They have served as meeting places for courtly societies and elderly people (politicians, journalists, talkers and artists) for various intellectual communications for most of this history, but have recently changed into social environments shared by all kinds of people just to have fun while drinking tea.

Turkey is a notable tea country harboring significant production potential and a deep tea culture to match; it is composed of and gaining unique characteristics in the world of tea agriculture.