Turkey Policy Brief 2018

BIODIVERSITY FOR FOOD AND NUTRITION

Harvesting the Benefits of Local Foods: from Healthy Diets to Sustainable Growth

Turkey faces multiple threats to its **natural and cultural biodiversity**, including degradation of unique ecosystems and the disappearance of many endemic species. However, much of Turkey's nutrient-rich biodiversity, particularly its wide variety of **edible wild plants**, can play a vital role in addressing concerns over both **dietary deficiencies** and **environmental degradation**. In fact, proper utilisation of wild edible species- by increasing farmer capacity, creating markets, educating youth, and promoting consumption- has the potential to **boost national economic and social growth**.

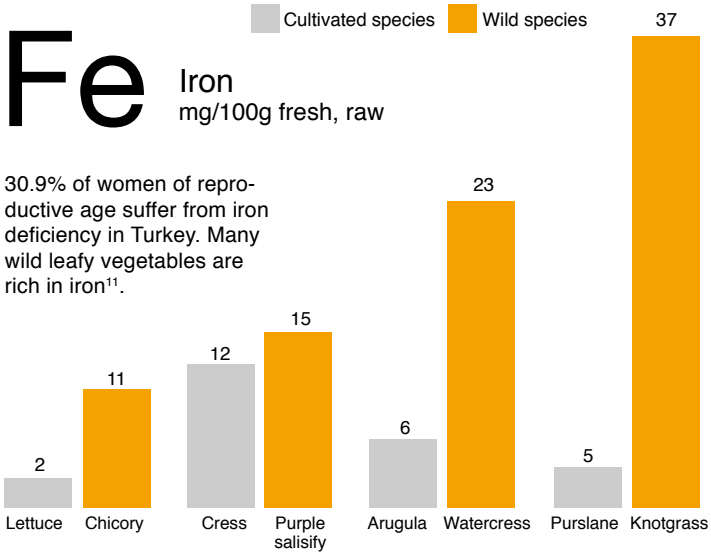
Key Messages

1. Mainstreaming the **conservation** and **sustainable use of biodiversity and wild edible species** in multi-sectoral policy programmes can support sustainable farming systems, protect the environment, conserve biodiversity, and produce diverse, nutritious foods.
2. Integrating knowledge about diet diversification in **education programs** could reduce malnutrition, leading to improved health and educational outcomes for adults and children.
3. The **domestication of wild edible species** protects the environment while supporting production and enhancing local businesses.
4. Increasing the **appreciation** of local edible biodiversity and wild foods can accelerate **rural development**, contributing to a better balance between rural and urban areas.
5. Educating students by **'greening' Technical Vocational Education and Training** positively impacts environmental protection and gives youth access to better job opportunities.

Actions for Policymakers

1. Develop **policies** that mainstream the conservation and sustainable use of biodiversity and wild edible species, strengthen policies that protect unique habitats important for wild edible **collection** and **ecotourism**.
2. Include **education** on conservation and utilization of agrobiodiversity as well as the importance of diet diversification in education programs at all levels, in particular in **Technical Vocational Education and Training** programs.
3. Invest in the **domestication of wild edible species** and support **value chain development** to enhance local businesses and improve farmers' and collectors' livelihoods.
4. Create **awareness campaigns** regarding diet diversification and the nutritional, environmental and economic benefits of biodiversity and wild edible species.
5. Mainstream biodiversity into education programs to **increase youth employability** in the growing **'green' sector**.

gef · UN environment · Food and Agriculture Organization of the United Nations · Bioversity International · CGIAR Research Program on Agriculture for Nutrition and Health



©TürKomp, Turkish Food Comp. Database, version 1.0, 2014; FAO/INFOODS Ver. 4.0 (BioFoodComp4.0)

Knotgrass *(Polygonum* spp.*)* and a collector with salsify *(Tragopogon porrifolius)*

The Status of Food Biodiversity in Turkey

Turkey is home to three of the world's 34 identified global **biodiversity hotspots**, containing almost **12,000** known species and sub-species of seed plants, of which 34% are endemic and around 10% identified as edible[1, 2, 3, 4]. Increasing urbanization, habitat loss, and overexploitation are **threatening** the unique growing grounds of many of these species, resulting in the disappearance of endemic Mediterranean maquis, grasslands, coastal areas, wetlands, rivers, old growth forests, steppes and rangelands along with numerous wild edible plant species that grow in these habitats[5].

Wild edible plants, which have played an important role in human diets since prehistoric times, are **common in Turkish cuisine** and are still consumed locally[6]. However, their use is gradually dying out as young people migrate to urban areas and food collection from the wild is no longer possible or convenient. Furthermore, the popularity of varied traditional dishes is declining with younger generations who are attracted to more Western-style diets[6, 7].

A wide variety of fresh and dried wild edible species at a market in Alaçatı.

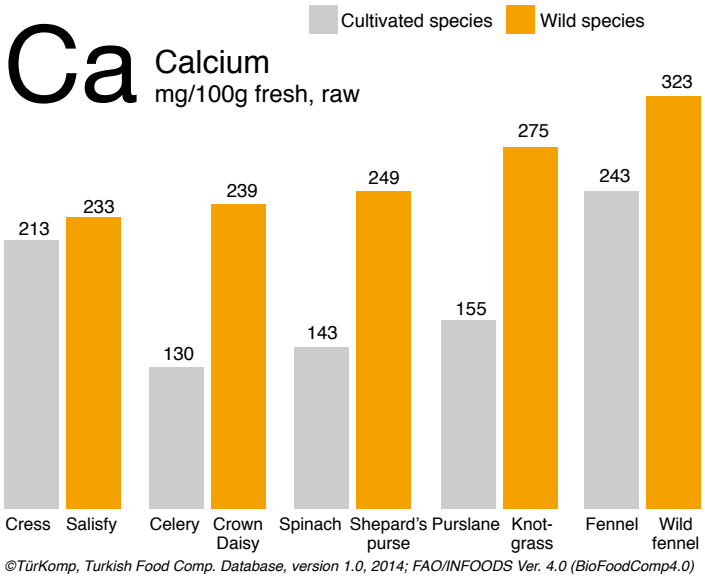
The Health Potential of Wild Edible Species

Lifestyle changes and the loss of traditional food culture lead to **unhealthy diets** which, along with physical inactivity, are main causes of **chronic diseases with high healthcare costs**, including cardiovascular diseases, cancer, and diabetes[8, 9]. According to Turkey's 2016 Health Survey, 1 in 5 people over 15 years of age is **obese** while 1 in 3 is pre-obese[10]. In addition, almost 1 in 3 women of reproductive age are **iron-deficient**[11].

Research shows that including a diversity of fruits and vegetables in diets can help solve national diet-related nutrition and health issues by providing ready access to **key nutrients needed for healthy growth and living**[12]. This is consistent with the Dietary Guidelines for Turkey[13] that promote the regular consumption of fruit and vegetables to improve health and help manage diet related illnesses[14].

Many wild edible plants are rich in macro- and micronutrients[15] and can considerably contribute to requirements of dietary fibre, vitamin C, iron, potassium and phosphorus. **Evidence** from the BFN Project* shows that, for some micronutrients, **wild species and landraces are nutritionally equivalent or superior to their cultivated counterparts** (see graphs)[16, 17]. In many regions of Turkey, particularly in rural areas, wild plants are collected and used to complement diets or for their medicinal properties. In the Aegean region, they are still served in traditional restaurants and widely consumed as an inexpensive alternative to cultivated vegetables[5, 7, 18]. Given that diet quality is strongly linked to the number of species grown on farm[12] and the availability of food species in the wild[19], it is critical to **revive interest in these important natural resources**, particularly for people with low purchasing power[20].

*The GEF Mainstreaming Biodiversity for Conservation and Sustainable Use for Improved Human Nutrition and Wellbeing Initiative (BFN) is led by Brazil, Kenya, Sri Lanka and Turkey and coordinated by Bioversity International, with implementation support from UN Environment and the Food and Agriculture Organization of the UN. Additional support for the project is provided by the CGIAR Research Program on Agriculture for Nutrition and Health. The project contributes to the Convention on Biological Diversity's Cross-cutting Initiative on Biodiversity for Food and Nutrition.



©TürKomp, Turkish Food Comp. Database, version 1.0, 2014; FAO/INFOODS Ver. 4.0 (BioFoodComp4.0)


Credit: Bioversity International/D. Hunter


Credit: S. Tuğrul Ay

Boy with wild herbs at Alaçatı Herb Festival and wild fennel (*Foeniculum vulgare*).

Sustainable Development with Biodiversity

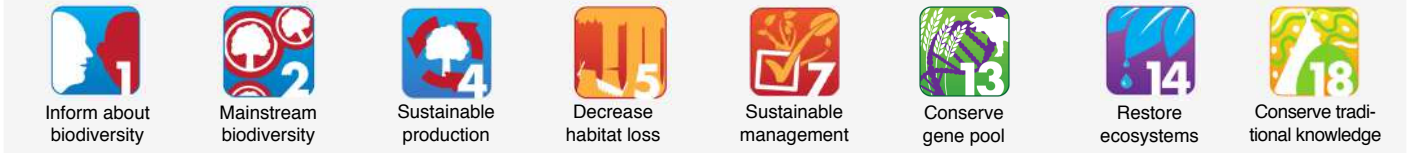
By **raising awareness** of the qualities of these nutrient-rich species and simultaneously supporting local farmers and collectors to domesticate species and engage with markets, wild edible plants could offer an opportunity to stimulate **local economies**[20, 21]. Furthermore, integrating knowledge about diet diversification, use and conservation of biodiversity in school systems, particularly in **school nutrition policies** such as the Turkish Healthy Nutrition and Active Life Programme and the Turkish Nutrition Friendly School Programme[22, 23] could teach youth to **appreciate and benefit from the nutrient-rich resources** readily available in their surroundings[22]. Biodiverse foods could contribute to the **Dietary Guidelines for Turkey**[13] and to the achievement of national targets such as those set by the **National Biodiversity Strategy and Action Plan**[24], highlighting the importance of identifying, appreciating and sustainably using species from less represented ecosystems. Each region of Turkey has unique ecological characteristics that offer exceptional culinary and traditional food experiences attractive to many **tourists**. This can contribute to the acceleration of **rural development** highlighted in the Tenth Development Plan of the Ministry of Development[25]. Outcomes stemming from the project have already been adopted in the Agricultural Research Master Plan (2016-2020) prepared by the Ministry of Agriculture and Forestry as research opportunity areas[26]. As outlined in the graphic below, further integration and use of wild species can fulfill international objectives such as the **UN Sustainable Development Goals** (SDGs)[27] and the **Aichi Biodiversity Targets**.

SHORT TERM → **LONG TERM**

Benefits over time

Conservation & Sustainable Use of Wild Edible Species	Awareness about Wild Edible Species & Healthy Diets	Green Vocational Education & Training	Improved Public Health & Sustainable Economy
Protection of unique habitats	Consumption of healthier and more diverse diets	Increased employability in growing green sector	Health care savings
Support for local businesses	Healthier children leading to healthier adults	Increased motivation for environmental protection	Healthy and productive population
Development of new markets	Conservation of traditional knowledge		Broad-based economic growth
Improvement of local livelihoods			Climate change resilience
Increased eco-tourism			

CBD targets



SDGs

Celebrating Traditional Knowledge of Wild Edible Plants

In the Ceşme peninsula, wild edible plants are part of the **rich and delicious cuisine** the area is famous for. As a result, locals have been collecting wild edible plants for centuries. Each year the **Alaçatı Herb Festival**, at its 9th edition in 2018, gathers thousands of visitors to celebrate the **health benefits** of wild edible plants, and support **local cuisines** and **food cultures** based on this biodiversity[28]. Nature walks and competitions for all ages are organized, rewarding the gatherer of the highest number of edible plants while helping scientists gather new information on each species. So far, the consumption of **111 species** and sub-species has been recorded with a variety of recipes, while more have yet to be identified[6]. The involvement of celebrity chefs has also helped popularize wild edible plants among younger generations.

Ensuring Future Biodiversity with Student Chefs

When adapted to an institution's educational and training activities, **greening** can initiate a systematic process of change. Partnering with the Halim Foçali Vocational School helped raise the profile of wild edible plants and associated traditional collection practices through a series of lectures and hands-on activities. Sixteen **student chefs** were trained to recognize and collect wild edible plants from the environment and use them in their cooking courses.[29] Future plans for the institute include the establishment of an herb **garden** on the school premises where wild edibles will be harvested for use in cooking classes. The activities undertaken as part of this project have fostered interest from the National Education Directorate of Foça to **extend the program** to other schools and officially include traditional wild plants as part of the **school curriculum**.

Greening Jobs and Increased Employment

Agricultural biodiversity offers a promising avenue for **"greening" vocational training**, particularly in the food and beverage sector. Encouraging awareness and motivation among youth to adopt environmentally friendly behaviour can ensure both **long-term environmental protection** and **economic benefits**. With the aim of including youth, women, persons with disabilities, rural communities and other vulnerable groups, US $10 billion dollars have been invested in the over 2 million students enrolled in Technical and Vocational Education and Training (TVET) programmes in Turkey[30, 31]. "Green" training offers workers knowledge, skills and competencies oriented to green occupations, giving them a competitive advantage and increased employability[31]. As emphasized in the Turkey Skills Vision 2020, Turkey can only achieve **sustainable growth** through better **education** outcomes, that in turn create better **employment** outcomes for students throughout the regions of Turkey[31, 32]. Including greener options could contribute to the creation of sustainable and social **enterprises** working for the common good of society, and contribute to the re-formulation of existing national policies in accordance with the Sustainable Development Report of the Ministry of Development[33]. Broadening access to TVET as a way to improve education and thus sustainable growth through more and better jobs is addressed through **national plans and strategies** such as the VET strategy 2014-2018, The Higher Education Strategy 2007-2025 and the Action Plan for Strengthening the Link between Education and Employment (İMEİGEP)[32, 34].

References

1. Republic of Turkey (2014) *Fifth National Report to the UN Convention on Biological Diversity.*
2. Ertug, F. (2014) *Yenen Bitkiler* (Edible Plants). In: Güner, A and Ekim, T. (Eds.) Resimli Türkiye Florası (İllustrated Flora of Turkey). Vol. 1. Ali Nihat Gökyiğit Vakfı, Flora Araştırmaları Derneği and Türkiye İş bankası Kültür Yayınları, İstanbul.
3. Güner, A. et al. (edlr.), (2012). *Türkiye Bitkileri Listesi (Damarlı Bitkiler).* List of Turkish Plants (vascular plant). Nezahat Gökyiğit Botanik Bahçesi ve Flora Araştırmaları Derneği Yayını. İstanbul.
4. Şekercioğlu, C.H. et al. (2011) *Turkey's globally important biodiversity in crisis.* Biological Conservation, Volume 144, Issue 12, Pages 2752-2769.
5. Tan, A. (2010). Country report on the State of Plant Genetic Resources for Food and Agriculture Turkey, AARI No: 141 Meta Basim, Bornova.
6. Tan. A. and Taşkın. T. (2011) *Some edible wild plants of Turkey and their use. Transaction of the International Scientific Conference "Actual Problems In the Use of Useful Plants".* Proceedings. 26-28. Bakü, Azerbaijan.
7. Dogan, Y. (2012) *Traditionally used wild edible greens in the Aegean Region of Turkey.* Acta Societatis Botanicorum Poloniae Vol 81, No 4.
8. Erem, C. (2015) *Prevalence of Overweight and Obesity in Turkey.* IJC Metabolic & Endocrine. Volume 8, Pages 38-41.
9. Candari, C., Cylus, J. and Nolte, E. (2017) *Assessing the economic costs of unhealthy diets and low physical activity – an evidence review and proposed framework.* WHO.
10. Turkish Statistical Institute (2017) *Turkey Health Survey, 2016.* Turkstat.
11. FAO, IFAD, UNICEF, WFP and WHO (2017) The State of Food Security and Nutrition in the World 2017. Building resilience for peace and food security. Rome, FAO.
12. Remans, R. & Smukler S. (2013). *Linking Biodiversity and Nutrition.* In J. Fanzo et al. (eds.) Diversifying Foods and Diets: using agricultural biodiversity to improve nutrition and health. Earthscan Routledge, pp. 140–163.
13. Ministry of Health of Turkey (2016) *Turkey Dietary Guidelines.* Pub. No: 1046, Ankara 2016". Yayın no: 1046. ISBN : 978-975-590-619-5.
14. World Health Organisation (2017) *Dietary recommendations/Nutritional requirements.*
15. Sánchez-Mata, M. and Tardío, J.'s (eds.) (2016) *Part II: Nutrient and Bioactive Compounds in Mediterranean Wild Edible Plants: Ethnobotany and Food Composition Tables.* Springer New York Heidelberg Dordrecht, London.
16. Güzelsoy, N. A. et al. (2017) *Nutritional Properties of Some Wild Edible Species in Turkey.* ANADOLU, J. of AARI ISSN: 1300 – 0225, 27 (2), 39-45.
17. Kibar, B. and Kibar, H. (2017) *Determination of the nutritional and seed properties of some wild edible plants consumed as vegetables in the Middle Black Sea Region of Turkey.* South African Journal of Botany. Volume 108, January 2017, Pages 117-125.
18. Tan, A. N. Adanacıoglu, S. Karabak, L. Aykas, N. Tas, T. Taylan. 2017. *Biodiversity for Food and Nutrition: Edible Wild Plant Species of Aegean Region of Turkey.* ANADOLU, J. of AARI ISSN: 1300 – 0225, 27 (2) 2017, 1-8.
19. Broegaard, R.B. et al. (2017). *Wild food collection and nutrition under commercial agriculture expansion in agriculture-forest landscapes.* Forest Policy and Economics 84: 92-101.
20. Karabak, S. (2017) *Economic and Socio Cultural Importance of Edible wild species.* ANADOLU, J. of AARI ISSN: 1300 – 0225, 27 (2), 26-38.
21. Bacchetta, L. et al. (2016) *A Manifesto for the valorization of wild edible plants.* Journal of Ethnopharmacology, Volume 191, 180-187.
22. WHO (2016) *Turkish Healthy Nutrition and Active Life Programme 2010–2014 and related initiatives.*
23. Ministry of Health (2011), *Turkish Health Nutrition and Active Life Programme 2010-2014.*
24. Ministry of Forestry And Water Affairs - Turkey (2014) *UN Convention on Biological Diversity Fifth National Report.*
25. Ministry of Development (2014) *Tenth development plan (2014-2018).*
26. Ministry of Food, Agriculture and Livestock (2016) Tarımsal Araştırma Mastır Planı (2016 - 2020). Ankara, Turkey. GTHB-TAGEM.
27. United Nations (2015) *Transforming our World: The 2030 Agenda for Sustainable Development.* A/RES/70/1.
28. Ot Festivali Alaçatı: http://explorealacati.com/en/alacati-activities/alacati-ot-festivali.
29. BFN (2017) *Case study: Students in nature, in the garden and in the kitchen.*
30. UNESCO-UNEVOC (2013) *World TVET Database – Turkey.* International Centre for Technical and Vocational Education and Training.
31. UNESCO-UNEVOC (2017) *Greening Technical and Vocational Education and Training – A practical guide for institutions.*
32. European Training Foundation (2014) *Skills Vision 2020 – Turkey.*
33. Ministry of Development (2012) *Turkey's Sustainable Development Report: Claiming the Future.*
34. Ministry of National Education (2014) *Turkeys' Vocational and Technical Education Strategy Paper and Action Plan (2014-2018).*