QANAT-BASED SAFFRON FARMING SYSTEM IN GONABAD - IRAN

Since 2016 the *Saffron Farming System based on Qanat irrigation* of Gonabad County (Khorasan Razavi Province) in Iran, is being valued by the FAO GIAHS Initiative as one of the world's *Globally Important Agricultural Heritage Systems*.

Thanks to the Qanat underground aqueduct, a high-value product as saffron is produced by local farmers taking advantage of the indigenous knowledge and skills which have been conserved for generations.

Cultivation of saffron is practiced in Iran's central plateau in an arid and semi-arid climate, with severe water shortages posing major threats to food security and livelihoods for local communities. The proper use of water resources obtained by the Qanat irrigation system and the production of saffron - a product with high added value - have created a unique opportunity for farmers and residents of the region to improve their livelihoods.

Qanat system is a reliable source of water and supports preservation of biodiversity and productivity. Throughout the arid regions of Iran, agricultural and permanent settlements are supported by the ancient Qanat system of tapping alluvial aquifers at the at the heads of valleys and conducting the water along underground tunnels by gravity, often over many kilometers. The Qanat of Gonabad is one of the oldest and largest Qanats in the world built between 800-500 BC. Its main well depth is more than 360 meters. It contains 427 water wells with a total length of 33,113 meters. After 2,700 years the Qanat still provides drinking and agricultural water to nearly 40,000 people of Gonabad.

In 2016 the Qanat system of Gonabad has been added with other 10 Qanat as *The Persian Qanat* to the UNESCO's list of World Heritage Sites.

Each Qanat comprises an almost horizontal tunnel collecting water from an underground water source, usually an alluvial fan, into which a mother well is sunk to the appropriate level of the aquifer. Well shafts are sunk at regular intervals along the route of the tunnel to enable removal of spoil and allow ventilation. These appear as craters from above, following the line of the Qanat from water source to agricultural settlement.

The water is transported along underground tunnels, so-called koshkan, by means of gravity due to the gentle slope

of the tunnel, to the exit (mazhar), from where it is distributed by channels to the agricultural land of the shareholders. The Qanats forming this property are still active water carriers and have retained not only their architectural and technological structures but also their function. They continue to provide the essential resource water sustaining Iranian settlements and gardens and remain maintained and managed through traditional community management systems. These management systems have remained intact and been transferred from the past thanks to the collaboration of people and users.

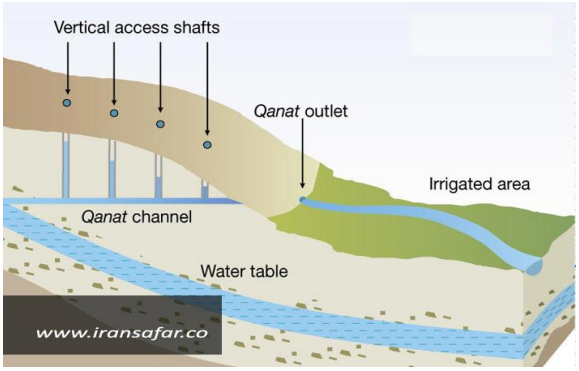
To ensure the continuous functionality of the Qanats, the water catchment areas are included in the buffer zone and have been committed to the highest protection levels considering their essential function in the provision of the water resources. Likewise, the agricultural areas illustrating the distribution and use of the water resources have been protected through buffer zones to allow the full long-term protection of the Qanat system.

Iran is the largest producer of Saffron in the world and has over 90% of Saffron production worldwide. According to the Agriculture Ministry of Iran, saffron is cultivated across 108,000 hectares of the country and in 2019 the saffron produce reached 400 tons, registering a growth in weight and value compared with the previous year (320 tons). Almost 95% of Iranian saffron is grown in the two provinces of South Khorasan and Khorasan Razavi.

In 2019, 3,500 hectares of Gonabad fields have been allocated for the production of Saffron (compared with 2,000 ha in 2016). These areas have highest quality, best access and most irrigation thanks to the use of the Qanat system. Farmers are encouraged to develop Saffron cultivation, generating profitable jobs and revenues for more than 400,000 people in the region. Saffron cultivation accounts for 35 percent of the revenue from the total agricultural income of the city.

Today the *Saffron Farming System based on Qanat irrigation* plays a key role in creating job opportunities, reducing migration, providing sustainable livelihoods, improving efficiency in water use and productivity and valuing the conservation of indigenous knowledge and skills for a sustainable future.

By developing its economic activities, the local population is also preserving the beauty of the landscape. Thanks to international recognitions from UNESCO and the FAO GIAHS initiative, more and more eco-tourists are visiting the region, the Qanat System of Gonabad and the beautiful colored fields planted with saffron.



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[Saffron Farming System based on Qanat irrigation in GIAHS website]

[GIAHS detailed information]

[GIAHS proposal for nomination]

Persian Qanat in UNESCO website

Persian Qanat Gallery in UNESCO website

Article in qasabehsaffron.com

Article in iranpress.com

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Article in gonabadnet.ir

Article in tehrantimes.com

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Article in financialtribune.com

Qanats of Gonabad in Wikipedia

UNESCO list of Intangible Cultural Heritage