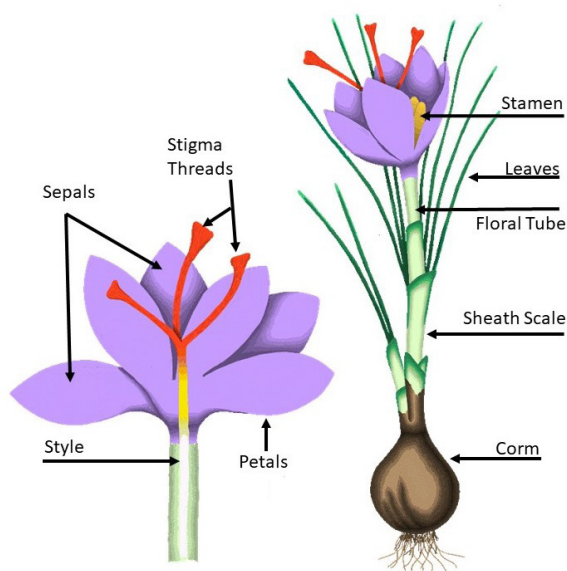


Saffron: A High-Value Crop

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Saffron (*Crocus sativus* L.) is a fall blooming bulbous plant that belongs to the Iridaceae family. Saffron is unlike some flowers because the sepals are purple and not green and look the same as the petals. Together the sepals and petals are called the perianth. Saffron is also unusual in that the flowers usually come up before the leaves start to grow. However, if conditions are right, leaves may start to come up before or during flowering.

Saffron is grown mainly for its red-colored stigma, however, other flower parts like the style and petals also have some economic importance. Saffron is the most expensive spice in the world. The average retail price range of saffron is from \$6,000 to \$18,000 per kilogram depending on its quality. The high cost of saffron is because all of the management practices from planting to harvesting and processing are done by hand. Saffron is mainly grown as a perennial crop; corms are planted and left in the field over 5-7 years to reproduce every year. It does not produce viable seed, but propagates vegetatively by producing daughter corms. Some farmers harvest the daughter corms annually during the dormant stage (usually

during summer) to sell or replant the corms in the fall. Saffron prefers warm, dry summers and cold wet winters and is grown in Mediterranean climates.

Saffron has a long history and its cultivation started almost 3,000 years ago. Cultivated saffron is a triploid species, which is believed to have originated in Crete, Greece, from the diploid *Crocus cartwrightianus*, although some argue for Iran and Spain as its birthplace. Major saffron growing countries are Iran, Afghanistan, Spain, Italy, Morocco, Greece, China, and Turkey. Iran alone produced 85.2 % of the world's total saffron production (475 tons) in 2018. Around 95% of the total produced saffron stigma threads are being used in the food industry for its defined color, taste, and aroma. Besides culinary value, saffron has value as a dye, perfume, and medicinal herb. Some major uses of saffron stigma threads are explained below:

Culinary values:

The culinary value of saffron stems from its color. Crocin is present in the red stigma part of saffron, which is easily soluble in water giving an orange color. Picrocrocin and safranal, respectively, are responsible for saffron's flavor and aroma. Saffron is a key ingredient in traditional dishes of different countries. Some of the examples are "Risotto Alla Milanese" in Italy, "Bouillabaisse" in France, "Paella."





Valenciana” in Spain, “Gugelhupf” in Germany, “Koftas” and “Pastilla” in Morocco, “Saffron syrup cake” in Iran, and “Lussekatter Buns” in Sweden. Today in the market, we can find various saffron products like saffron dessert powder, saffron cream powder, saffron cake mixer, and different semi-ready to use saffron soup and spice mixtures. Saffron stigma are also used in various alcoholic beverages to provide color and flavor.

Medicinal values:

Saffron has been used for 3,000 years, in Ayurveda, Chinese, Arabic, Mongolian, Greek, and Egyptian traditional medicine for the treatment of various diseases. Studies have shown that saffron has anti-mutagenic, anti-cancer, anti-oxidant, anti-depressant, anti-inflammatory, anti-bacterial, and anti-fungal properties. Saffron has the potential to be used in the development of new drugs.



Cosmetic values:

Saffron has gained new interest in the cosmetic industry because of its anti-UV, anti-aging, and anti-oxidant properties. Saffron is also used to make perfume because of its unique aroma.

Dyeing fiber

Saffron has been used for dyeing cotton and wool fiber for many years. Extracting the natural dye from saffron floral parts like the style and petals enhances the economic value of saffron as well as promotes an eco-friendly fabric dyeing processes.

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