

# Cultivation, Significance and Uses of Rose

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**ABSTRACT:** A rose is either a woody perennial flowering plant of the genus *Rosa*, in the family Rosaceae or the flower it bears. There are over three hundred species and tens of thousands of cultivars. They form a group of plants that can be erect shrubs, climbing, or trailing, with stems that are often armed with sharp prickles. Their flowers vary in size and shape and are usually large and showy, in colours ranging from white through yellows and reds. Most species are native to Asia, with smaller numbers native to Europe, North America, and northwestern Africa. Species, cultivars and hybrids are all widely grown for their beauty and often are fragrant. Roses have acquired cultural significance in many societies. Rose plants range in size from compact, miniature roses, to climbers that can reach seven meters in height. Different species hybridize easily, and this has been used in the development of the wide range of garden roses. The name rose comes from Latin *rosa*, which was perhaps borrowed from Oscan, from Greek, itself borrowed from Old Persian wrd- (wurdī), related to Avestan varəda, Sogdian ward, Parthian wâr

**KEYWORDS:** rose, biodiversity, cultivars, hybrids, garden, Persian, species, shrubs, climbers, trailing

## I. INTRODUCTION

The oldest remains of roses are from the Late Eocene Florissant Formation of Colorado.<sup>[5]</sup> Roses were present in Europe by the early Oligocene.<sup>[6]</sup> Today's garden roses come from 18th-century China.<sup>[7]</sup> Among the old Chinese garden roses, the Old Blush group is the most primitive, while newer groups are the most diverse.<sup>[8]</sup> The genus *Rosa* is composed of 140–180 species and divided into four subgenera:<sup>[9]</sup>

- *Hulthemia* (formerly *Simplicifoliae*, meaning "with single leaves") containing two species from southwest Asia, *Rosa persica* and *Rosa berberifolia*, which are the only roses without compound leaves or stipules.
- *Hesperhodos* (from the Greek for "western rose") contains *Rosa minutifolia* and *Rosa stellata*, from North America.
- *Platyrhodon* (from the Greek for "flaky rose", referring to flaky bark) with one species from east Asia, *Rosa roxburghii* (also known as the chestnut rose).
- *Rosa* (the type subgenus, sometimes incorrectly called *Eurosa*) containing all the other roses. This subgenus is subdivided into 11 sections.
  - *Banksianae* – white and yellow flowered roses from China.
  - *Bracteatae* – three species, two from China and one from India.
  - *Caninae* – pink and white flowered species from Asia, Europe and North Africa.
  - *Carolinae* – white, pink, and bright pink flowered species all from North America.
  - *Chinensis* – white, pink, yellow, red and mixed-colour roses from China and Burma.
  - *Gallicanae* – pink to crimson and striped flowered roses from western Asia and Europe.
  - *Gymnocarpae* – one species in western North America (*Rosa gymnocarpa*), others in east Asia.
  - *Laevigatae* – a single white flowered species from China.
  - *Pimpinellifoliae* – white, pink, bright yellow, mauve and striped roses from Asia and Europe.
  - *Rosa* (syn. sect. *Cinnamomeae*) – white, pink, lilac, mulberry and red roses from everywhere but North Africa.
  - *Synstylae* – white, pink, and crimson flowered roses from all areas.

Roses are best known as ornamental plants grown for their flowers in the garden and sometimes indoors. They have been also used for commercial perfumery and commercial cut flower crops. Some are used as landscape plants, for hedging and for other utilitarian purposes such as game cover and slope stabilization. The majority of ornamental roses are hybrids that were bred for their flowers. A few, mostly species roses are grown for attractive or scented foliage (such as *Rosa glauca* and *Rosa rubiginosa*), ornamental thorns (such as *Rosa sericea*) or for their showy fruit (such as *Rosa moyesii*).

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Ornamental roses have been cultivated for millennia, with the earliest known cultivation known to date from at least 500 BC in Mediterranean countries, Persia, and China.<sup>[10]</sup> It is estimated that 30 to 35 thousand rose hybrids and cultivars have been bred and selected for garden use as flowering plants.<sup>[11]</sup> Most are double-flowered with many or all of the stamens having morphed into additional petals.

In the early 19th century the Empress Josephine of France patronized the development of rose breeding at her gardens at Malmaison. As long ago as 1840 a collection numbering over one thousand different cultivars, varieties and species was possible when a rosarium was planted by Loddiges nursery for Abney Park Cemetery, an early Victorian garden cemetery and arboretum in England.

Roses are a popular crop for both domestic and commercial cut flowers. Generally they are harvested and cut when in bud, and held in refrigerated conditions until ready for display at their point of sale.

In temperate climates, cut roses are often grown in greenhouses, and in warmer countries they may also be grown under cover in order to ensure that the flowers are not damaged by weather and that pest and disease control can be carried out effectively. Significant quantities are grown in some tropical countries, and these are shipped by air to markets across the world.<sup>[12]</sup>

Some kind of roses are artificially coloured using dyed water, like rainbow roses.

Rose perfumes are made from rose oil (also called attar of roses), which is a mixture of volatile essential oils obtained by steam distilling the crushed petals of roses. An associated product is rose water which is used for cooking, cosmetics, medicine and religious practices. The production technique originated in Persia<sup>[13]</sup> and then spread through Arabia and India, and more recently into eastern Europe. In Bulgaria, Iran and Germany, damask roses (*Rosa × damascena* 'Trigintipetala') are used. In other parts of the world *Rosa × centifolia* is commonly used. The oil is transparent pale yellow or yellow-grey in colour. 'Rose Absolute' is solvent-extracted with hexane and produces a darker oil, dark yellow to orange in colour. The weight of oil extracted is about one three-thousandth to one six-thousandth of the weight of the flowers; for example, about two thousand flowers are required to produce one gram of oil.

The main constituents of attar of roses are the fragrant alcohols geraniol and L-citronellol and rose camphor, an odorless solid composed of alkanes, which separates from rose oil.<sup>[14]</sup> β-Damascenone is also a significant contributor to the scent.

## II.DISCUSSION

Rose hips are high in vitamin C, are edible raw,<sup>[15]</sup> and occasionally made into jam, jelly, marmalade, and soup, or are brewed for tea. They are also pressed and filtered to make rose hip syrup. Rose hips are also used to produce rose hip seed oil, which is used in skin products and some makeup products.<sup>[16]</sup>

Rose water has a very distinctive flavour and is used in Middle Eastern, Persian, and South Asian cuisine—especially in sweets such as Turkish delight,<sup>[17]</sup> barfi, baklava, halva, gulab jamun, knafeh, and nougat. Rose petals or flower buds are sometimes used to flavour ordinary tea, or combined with other herbs to make herbal teas. A sweet preserve of rose petals called gulkand is common in the Indian subcontinent. The leaves and washed roots are also sometimes used to make tea.<sup>[15]</sup>

In France, there is much use of rose syrup, most commonly made from an extract of rose petals. In the Indian subcontinent, Rooh Afza, a concentrated squash made with roses, is popular, as are rose-flavoured frozen desserts such as ice cream and kulfi.<sup>[18][19]</sup>

The flower stems and young shoots are edible, as are the petals (sans the white or green bases).<sup>[15]</sup> The latter are usually used as flavouring or to add their scent to food.<sup>[20]</sup> Other minor uses include candied rose petals.<sup>[21]</sup>

Rose creams (rose-flavoured fondant covered in chocolate, often topped with a crystallised rose petal) are a traditional English confectionery widely available from numerous producers in the UK.

Under the American Federal Food, Drug, and Cosmetic Act,<sup>[22]</sup> there are only certain *Rosa* species, varieties, and parts are listed as generally recognized as safe (GRAS).

- Rose absolute: *Rosa alba* L., *Rosa centifolia* L., *Rosa damascena* Mill., *Rosa gallica* L., and vars. of these spp.
- Rose (otto of roses, attar of roses): Ditto

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- Rose buds
- Rose flowers
- Rose fruit (hips)
- Rose leaves: Rosa spp.<sup>[23]</sup>

The rose hip, usually from *R. canina*, is used as a minor source of vitamin C. The fruits of many species have significant levels of vitamins and have been used as a food supplement. Many roses have been used in herbal and folk medicines. *Rosa chinensis* has long been used in Chinese traditional medicine. This and other species have been used for stomach problems, and are being investigated for controlling cancer growth.<sup>[24]</sup> In pre-modern medicine, diarrhodon (Gr διάρροδον, "compound of roses", from ῥόδων, "of roses"<sup>[25]</sup>) is a name given to various compounds in which red roses are an ingredient. The long cultural history of the rose has led to it being used often as a symbol. In ancient Greece, the rose was closely associated with the goddess Aphrodite.<sup>[26][27]</sup> In the Iliad, Aphrodite protects the body of Hector using the "immortal oil of the rose"<sup>[28][26]</sup> and the archaic Greek lyric poet Ibycus praises a beautiful youth saying that Aphrodite nursed him "among rose blossoms".<sup>[29][26]</sup> The second-century AD Greek travel writer Pausanias associates the rose with the story of Adonis and states that the rose is red because Aphrodite wounded herself on one of its thorns and stained the flower red with her blood.<sup>[30][26]</sup> Book Eleven of the ancient Roman novel The Golden Ass by Apuleius contains a scene in which the goddess Isis, who is identified with Venus, instructs the main character, Lucius, who has been transformed into a donkey, to eat rose petals from a crown of roses worn by a priest as part of a religious procession in order to regain his humanity.<sup>[27]</sup>

Following the Christianization of the Roman Empire, the rose became identified with the Virgin Mary. The colour of the rose and the number of roses received has symbolic representation.<sup>28</sup> The rose symbol eventually led to the creation of the rosary and other devotional prayers in Christianity.

Ever since the 1400s, the Franciscans have had a Crown Rosary of the Seven Joys of the Blessed Virgin Mary.<sup>[27]</sup> In the 1400s and 1500s, the Carthusians promoted the idea of sacred mysteries associated with the rose symbol and rose gardens.<sup>[25]</sup> Albrecht Dürer's painting The Feast of the Rosary (1506) depicts the Virgin Mary distributing garlands of roses to her worshippers.<sup>[27]</sup>

Roses symbolised the Houses of York and Lancaster in a conflict known as the Wars of the Roses.

Roses are a favored subject in art and appear in portraits, illustrations, on stamps, as ornaments or as architectural elements. The Luxembourg-born Belgian artist and botanist Pierre-Joseph Redouté is known for his detailed watercolours of flowers, particularly roses.

Henri Fantin-Latour was also a prolific painter of still life, particularly flowers including roses. The rose 'Fantin-Latour' was named after the artist.

Other impressionists including Claude Monet, Paul Cézanne and Pierre-Auguste Renoir have paintings of roses among their works. In the 19th century, for example, artists associated the city of Trieste with a certain rare white rose, and this rose developed as the city's symbol. It was not until 2021 that the rose, which was believed to be extinct, was rediscovered there.<sup>[21]</sup>

In 1986 President Ronald Reagan signed legislation to make the rose<sup>[28]</sup> the floral emblem of the United States.<sup>[26]</sup>

## III.RESULTS

Wild roses are host plants for a number of pests and diseases. Many of these affect other plants, including other genera of the Rosaceae.

Cultivated roses are often subject to severe damage from insect, arachnid and fungal pests and diseases. In many cases they cannot be usefully grown without regular treatment to control these problems.

The Juliet Rose is one of the rarest flowers and roses in the world. It is also regarded as the most expensive flower in the world. Juliet roses are distinguished by their full cups and beautiful, distinctive petals. It has an apricot color and a delicious peachy fragrance. It has exceptional health and vigor and is not susceptible to diseases. Plenty of upright branches grow right from this rose bush's base. When fully bloomed, they reveal smaller blooms at their center. David

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Austen developed this beautiful rose in 1978 and spent 15 years cultivating it in England. This cost him a whopping \$4.3 million. Its debut was at the prestigious Chelsea Flower Show in London in 2006. A rose garden or rosarium is a garden or park, often open to the public, used to present and grow various types of garden roses, and sometimes rose species. Most often it is a section of a larger garden. Designs vary tremendously and roses may be displayed alongside other plants or grouped by individual variety, colour or class in rose beds. Technically it is a specialized type of shrub garden, but normally treated as a type of flower garden, if only because its origins in Europe go back to at least the Middle Ages in Europe, when roses were effectively the largest and most popular flowers, already existing in numerous garden cultivars.<sup>20</sup>

Of the over 150 species of rose, the Chinese Rosa chinensis has contributed most to today's garden roses; it has been bred into garden varieties for about 1,000 years in China, and over 200 in Europe.<sup>[1]</sup> It is believed that roses were grown in many of the early civilisations in temperate latitudes from at least 5000 years ago. They are known to have been grown in ancient Babylon.<sup>[2]</sup> Paintings of roses have been discovered in Egyptian pyramid tombs from the 14th century BC.<sup>[3]</sup> Records exist of them being grown in Chinese gardens and Greek gardens from at least 500 BC.<sup>[4][5]</sup> Many of the original plant breeders used roses as a starting material as it is a quick way to obtain results.

Most of the plants grown in these early gardens are likely to have been species collected from the wild. However, there were large numbers of selected varieties being grown from early times; for instance numerous selections or cultivars of the China rose were in cultivation in China in the first millennium AD.<sup>[6]</sup>

The significant breeding of modern times started slowly in Europe from about the 17th century. This was encouraged by the introduction of new species, and especially by the introduction of the China rose into Europe in the 19th century.<sup>[5]</sup> An enormous range of roses has been bred since then. A major contributor in the early 19th century was Empress Josephine of France, who patronized the development of rose breeding at her gardens at Malmaison.<sup>[7]</sup> As long ago as 1840, a collection numbering over one thousand different cultivars, varieties and species was possible when a rosarium was planted by Loddiges nursery for Abney Park Cemetery, an early Victorian garden cemetery and arboretum in England.<sup>[8]</sup>

British designers of rose gardens include Thomas Mawson, who created examples at Graythwaite Hall (his first major garden project in 1886) and other sites, including Bushey (1913). Another surviving old public rose garden is Jules Graveraux's Roseraie du Val-de-Marne south of Paris in L'Haÿ-les-Roses, which was laid out in 1899 and remains the biggest rose garden in France.

## IV.CONCLUSIONS

A rose show is a horticultural exhibition focusing exclusively on roses. The American Rose Society sets guidelines and standards for rose shows in the US (and for Canadian rose societies affiliated with the ARS) and is the International Cultivar Registration Authority for Roses by appointment of the International Society for Horticultural Science.<sup>[9][4]</sup> The Rose Society UK sets the guidelines and standards and organises rose shows in the UK. Many Canadian and Australian rose societies were affiliated with the RNRS in addition to their own national societies. Rose shows using ARS guidelines use cultivar classifications assigned by the ARS, for instance Hybrid Tea or Gallica.<sup>[10]</sup> The ARS also assigns one of 18 official color classes to cultivars, for instance Light Yellow, Medium Yellow, Deep Yellow, and Yellow Blend. There is no color class for blue. Rose shows are hosted by local societies and may be organized as a local show, an ARS District show, or an ARS National show. Local shows generally require no registration or entry fees, while District and National shows do. All three levels of rose show generally offer three divisions: Challenge Classes, Horticulture, and Arrangements. Other divisions may be offered, for instance Rose Photography or Rose Crafts. Rose-themed Quilts have been included at rose shows. The Challenge Classes available vary between the local, District, and National levels.<sup>11</sup>

The Horticulture division of a rose show consists of (usually) single specimens of roses – one 'Peace' rose in a vase, for instance. A few Horticulture classes call for multiple specimens, for instance 3 Stems Hybrid Tea, One Variety. In US shows, the Horticulture classes can be organized either alphabetically by name, i.e. 'Peace' would be exhibited under Hybrid Teas N-R; or by ARS color classes, i.e. 'Peace' would be exhibited under Hybrid Tea Yellow Blends. In some larger shows, popular varieties with many entries, such as 'Peace', may get their own class. The Challenge Classes

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division imposes special criteria on the exhibit, for instance Five Floribunda Sprays, Five Varieties, judged on both individual bloom quality and composition of the whole. There are five kinds of Challenge classes: multiple stems of multiple varieties of the same class; multiple stems of one variety; multiple stems of multiple classes; bloom progression (3 stems: bud, exhibition bloom, and open bloom with stamens showing); and English-style box (6 roses).<sup>[11]</sup> Other popular Challenge classes include Most Fragrant, Rose in a Photo Frame, Rose in a Bowl, and Artist's Palette (5 roses, different colors). The Arrangements division consists of floral arrangements in which roses predominate.<sup>15</sup>

The ARS offers a series of named Challenge classes, ranging in size from a single Grandiflora in an "appropriate" container, to 5 Old Garden roses in separate containers, to 6 All-American Rose Selection winners in separate containers, to 12 Miniature roses in a clear container.<sup>[12]</sup>

Rose shows using ARS guidelines and standards are judged by ARS-accredited judges working in teams of three. Accreditation requires experience exhibiting, working as a show clerk, attending a judging school, and passing an exam and an apprenticeship.<sup>[13]</sup> Judging schools in the US are held by the ARS Districts and are required to use the ARS-published Guidelines for Judging Roses as the text. The exam is a standardized national exam. Judges are required to audit the judging school every three years.<sup>[14]</sup> The ARS has established standard certificates for awards at local society rose shows, for instance Queen, King, Princess; Classic Shrub, Modern Shrub. Local societies are free to use any or all of these certificates, plus other categories as desired.

Various publications are used by exhibitors to enter their roses in the right show category. The ARS publishes the Handbook for Selecting Roses, mailed to members annually, which lists most roses in commerce in North America and gives the official Exhibition Name, color class, petal count, year of introduction, and classification. The Combined Rose List is published annually and is used by exhibitors and judges as a reference for official cultivar names and unofficial synonyms, color category and classification, and year of introduction. It includes all roses known to be in commerce worldwide. The Guidelines for Judging Roses is published by the ARS and gives the standards by which roses are to be judged: Form, Color, Substance, Stem and Foliage, Balance and Proportion, and Size.

Rose flowers come in different forms. Flowers may be cupped, globular, flat, imbricated (like a camellia) or high-centered. Exhibition flower form is defined by the ARS as a high-centered flower with a circular outline and petals that spiral outwards from the center in a symmetrical manner.<sup>[11]</sup> In profile, the flower should form a cone. Most cultivars are exhibited at a stage from one half to three quarters open – enough to show the pointed center, with no stamens showing. Exhibition form roses must also produce long stems. Some rose cultivars are capable of producing flowers of exhibition form, while many others are not. These latter cultivars may be referred to as 'garden' or 'decorative' roses. A few cultivars may produce exhibition form flowers under certain weather conditions but not others. Rose shows may have special classes for the decorative roses separate from the exhibition roses. Queen of Show, the highest award, is generally reserved for roses of exhibition form. In 19th century rose shows, exhibition cultivars were mostly Hybrid Perpetuals and Teas.<sup>[1]</sup> These have now fallen out of favor as exhibition roses and are relegated to separate classes for Old Garden Roses, not eligible for Queen of Show. Hybrid tea roses were developed early in the 20th century, with even higher-centered flowers and more symmetrical spiralling than the Hybrid Perpetuals were capable of producing, and quickly became the favored exhibition roses.<sup>[2]</sup> Roses in the US are also shown at garden club shows and county fairs. These shows are generally not judged by ARS-accredited judges or by ARS judging standards. The National Council of State Garden Clubs trains and certifies judges for these shows, including sections on the judging of roses.<sup>[15]</sup> ARS-affiliated local rose societies may host rose shows that do not use the ARS guidelines or standards; these are often called Rose Displays and often are not judged at all, merely admired. Heritage rose groups, independent of the ARS, host non-judged Celebrations of Old Roses, as well as garden tours.<sup>13</sup>

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