CROCUS BOTANY

Crocus botany

What follows is an introduction to the botany of the Crocus. A quick perusal of the terms used will help in understanding (and enjoying) the many images on the site. A basic knowledge of the botany of the plant is more essential if you are hoping to use the site to identify plants seen in the wild or grown at home.

The Crocus is a perennial plant, with an underground storage organ in the form of a corm, which has evolved to overcome a dry period during which the plant is dormant. They are dwarf plants, the flowers rarely exceeding 15cm (6 inches) although the leaves may be considerably longer.

Crocus corms vary considerably in size and shape. The corm tunic, the outer coat of the corm, which is formed of expanded leaf bases, also varies considerably. This can be a helpful diagnostic feature. Tunics may be papery, fibrous or eggshell-like. Fibrous tunics may have parallel fibres, be interwoven or reticulate (netted).

Above ground almost all species have leaves with a distinctive central white stripe, which is due to some cells having no chlorophyll. Flowers develop on a tube, the true stem remaining below ground until the seeds ripen. Flowers have six petals in two whorls of three, the outer set often slightly larger, can also be attractively marked. Colour varies greatly through a common theme of white, yellow and purple, in many shades and combinations. Crocuses have three stamens. The pollen bearing anthers may be yellow, white or black and are attached to the throat of the flower by short stalks called filaments. White anthers have white pollen but black anthers open to reveal golden pollen as do yellow anthers. The style extends from the centre of the flower, between the anthers. It divides into three or more branches, at the tips of which are the pollen-receiving stigma. The type of branching and its extent can be an important aid in distinguishing between species, as well as often being a very attractive feature. Pollination is achieved by insects; bees, moths and beetles. Many species have a delicious honey scent.

The seeds ripen as the leaves die away. The subterranean ovary is pushed up as the stem below lengthens, thus the developing seeds are protected from adverse weather and grazing until ripe for dispersal. A completely new corm develops on top of the old one during each growing season.

CROCUS CORMS and TUNICS

CORM IMAGES **Left: Crocus fleischeri corm**

This species has tunics with interwoven fibres, which are the most netted in the genus and as such are a principal distinguishing feature.

Right: Crocus laevigatus corm This species has a hard, coriaceous (eggshell like) corm tunic. The corms are distinctively shaped and relatively small. A thick hard tunic gives extra protection from drought.

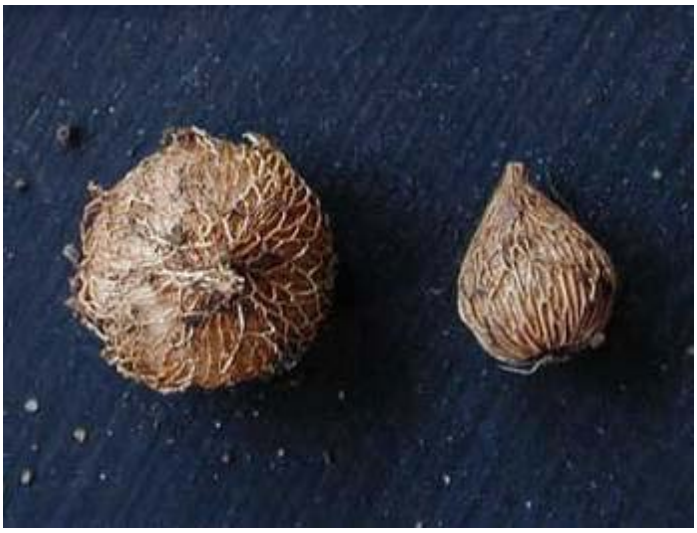
Left: Crocus hermoneus corm

A very large corm with parallel fibres, which are slightly netted at the top of the corm.

Right: Crocus gilanicus corm

Example of a membranous or papery tunic and what might be thought of as a 'typical' corm shape. Thin tunics such as this often indicate species which come from relatively moist habitats.

TUNIC IMAGES



Crocus abantensis corms

An example of reticulate (netted) corm tunic

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Crocus biflorus tunics (wild)

Coriaceous (eggshell-like) tunics which can split at the base.

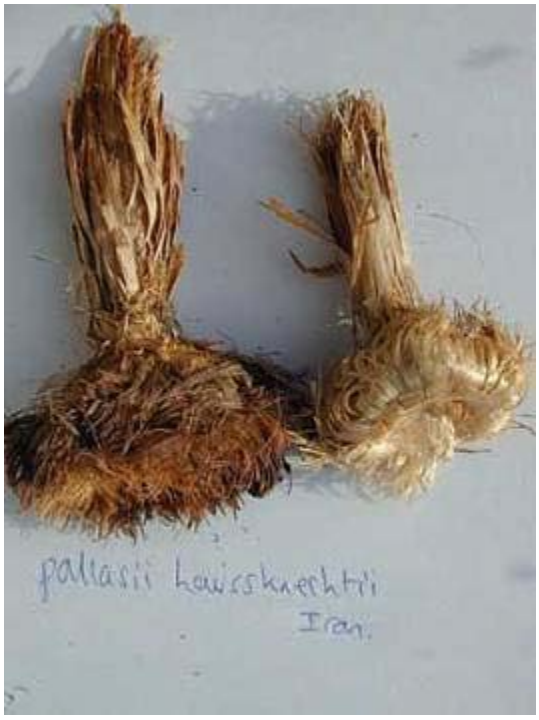
Basal rings (see below) are a feature of this species.

Wild plants often have several years' accumulation of tunics wrapped around them.

Crocus biflorus tunic basal rings

Crocus cancellatus tunics (wild)

Netted tunics, which have accumulated around the corm over many years giving protection from extreme drought.



Crocus pallasii haussknechtii (wild)

Fibrous tunics with extended neck.

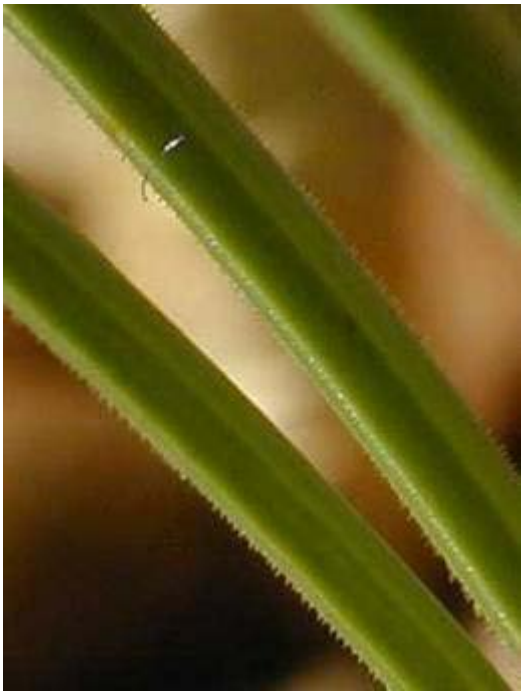
Many years accumulation of tunics around the bulb indicate that this species comes from a semi-desert habitat.

CROCUS LEAVES

Crocus leaves have a characteristic 'stripe' of chlorophyll free cells down the middle. The stripe varies in width between species (see below) but is common to almost all taxa. The leaves may have minute hairs, often along the margins. The underside of the leaves usually has a keel, which may have grooves alongside it. These features can be of taxonomic importance. The number of leaves per corm varies considerably and can be useful in distinguishing between species. Illustrated below are Crocus hermoneus (few broad dark green leaves with prominent central white stripe) and Crocus pallasii haussknechtii (many narrow grey green leaves with insignificant central stripe.)

Crocus hermoneus leaf – upper surface

A dark green leaf with a wide central stripe.



Crocus pallasii haussknechtii leaves

Note the ciliate (hairy) margins to the leaves.

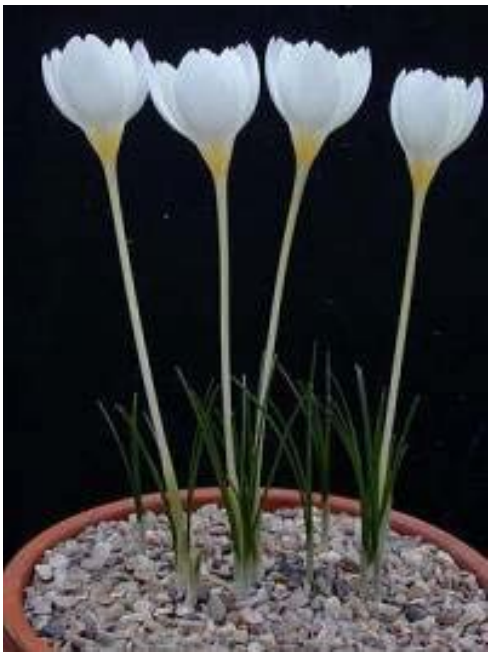
Left: Crocus hermoneus – few broad leaves

Below: Crocus pallasii haussknechtii – many narrow leaves.

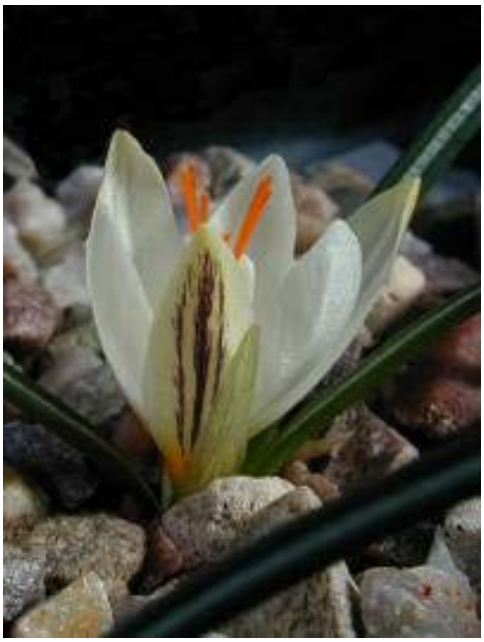
CROCUS FLOWERS

The jewel-like flowers of the Crocus are their great horticultural asset. A long flowering season makes for interest over a long period when a range of species are grown. The flowers vary in size, shape, colour and markings, making for a kaleidoscope of different forms. Considerable variation is seen within some taxa, which can make for confusion, even among the experts.

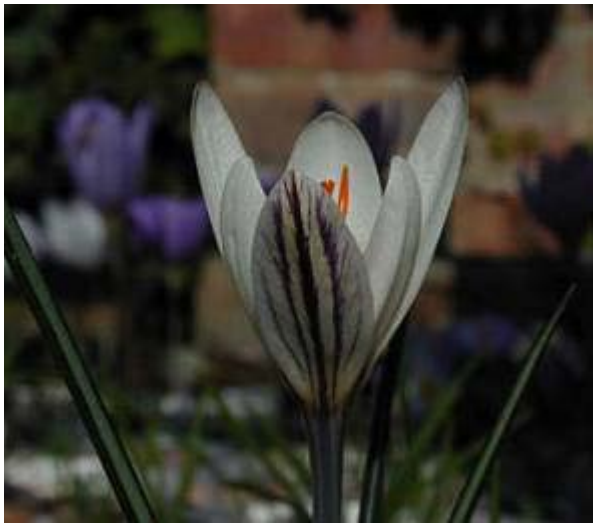
The flowers are carried on floral tube, which may be very short (Crocus laevigatus) but up to 15cm (Crocus niveus). The tube often lengthens as the flower ages although length is also influenced by cultural conditions.



Crocus niveus



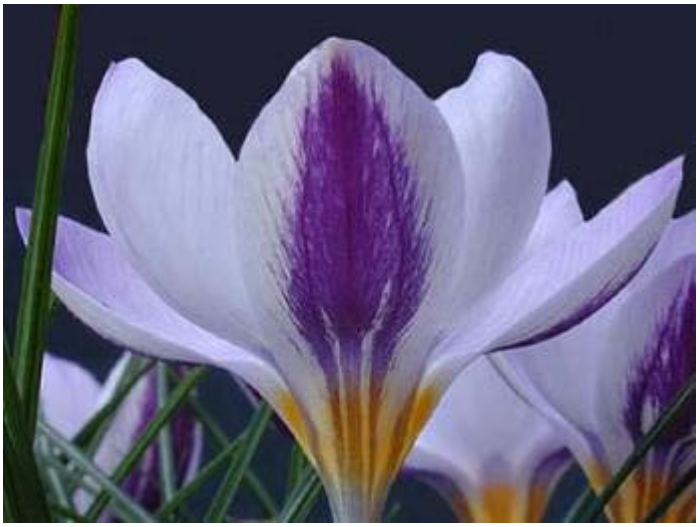
Crocus laevigatus



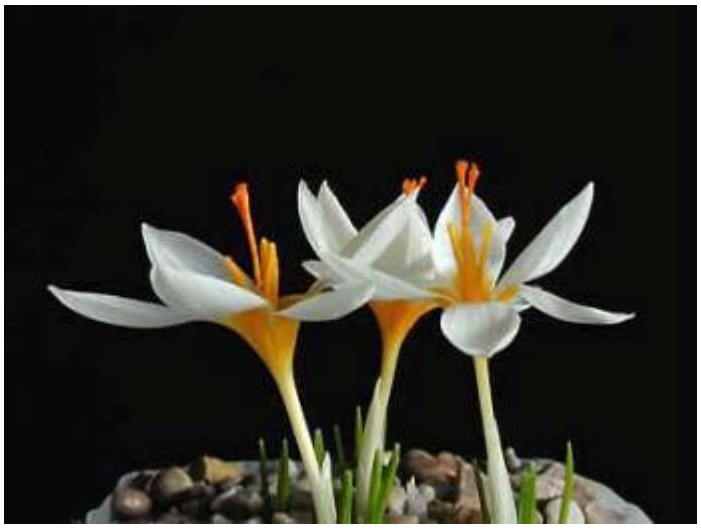
This feathering is usually only present on the outside of the three outer petals but occasionally runs throughout all the petals as in Crocus kotschyanus cappadocicus, right.

Left: The exterior may be feathered as in Crocus laevigatus.

The petals may be stippled with many tiny dots of colour as in this very attractive form of Crocus caspius, left.



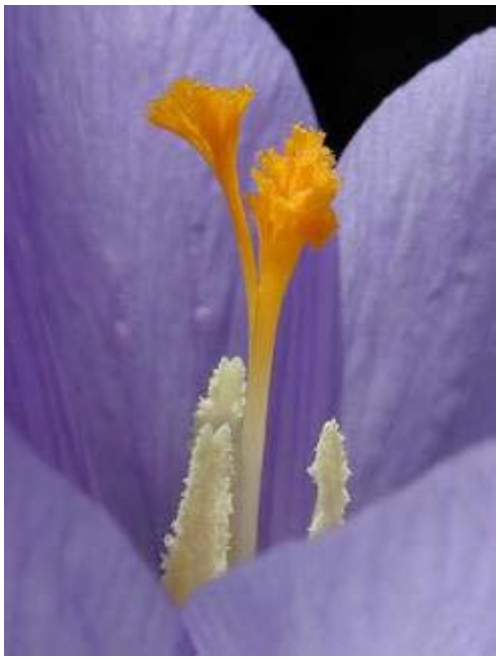
The ‘feathering’ sometimes merges to give a large blotch of a different colour on the outer petals. This sometimes completely covers the outer petals resulting in an apparent colour change when the flower opens to reveal its interior.



White forms occur within most species. These may or may not carry the exterior markings that are prevalent in the common forms. Shown here is Crocus sieberi ‘Bowles White’ a widely available cultivar of Crocus sieberi.

CROCUS STAMENS and STYLES

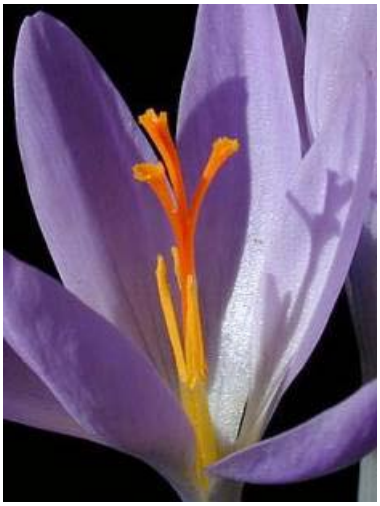
Crocus have three pollen bearing anthers.



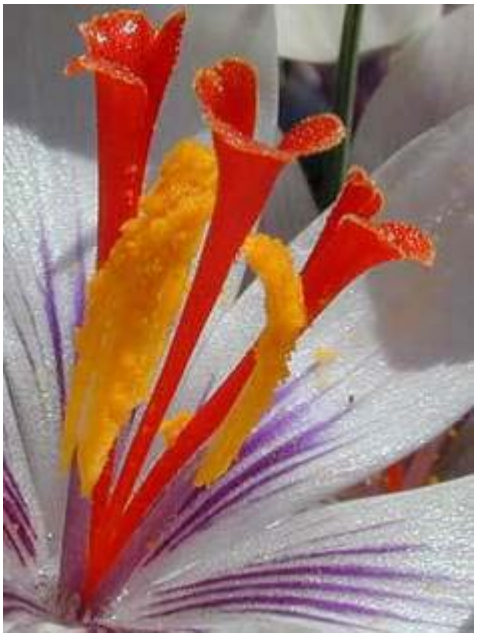
Crocus kotschyanus kotschyanus. White anthers, white pollen.

Crocus serotinus salzmannii. Yellow anthers, yellow pollen. Occasionally they are blackish maroon, in this case the pollen is yellow.

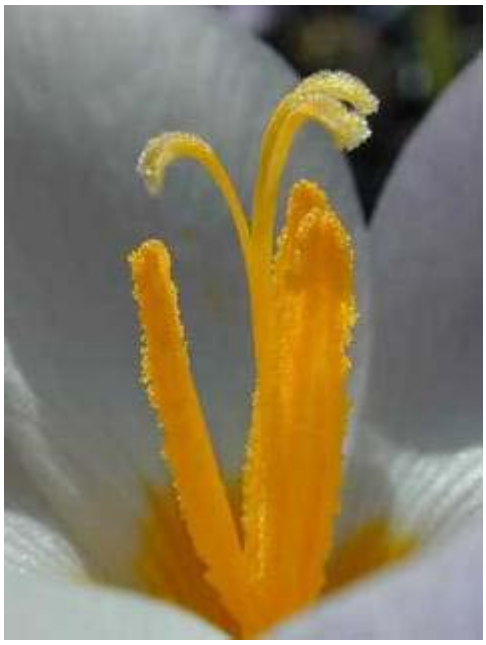
The style, which has a sticky surface at the tip to receive pollen, takes many different forms. Some of these are illustrated below.



Crocus serotinus clusii. This has a simple three branched orange style which divides above the anthers.



Crocus cartwrightianus. A white form, which has three bright red style branches, which divide in the throat of the flower and are expanded at the apex. This form has purple filaments (the stalks holding the anthers) and a pubescent (hairy) throat.

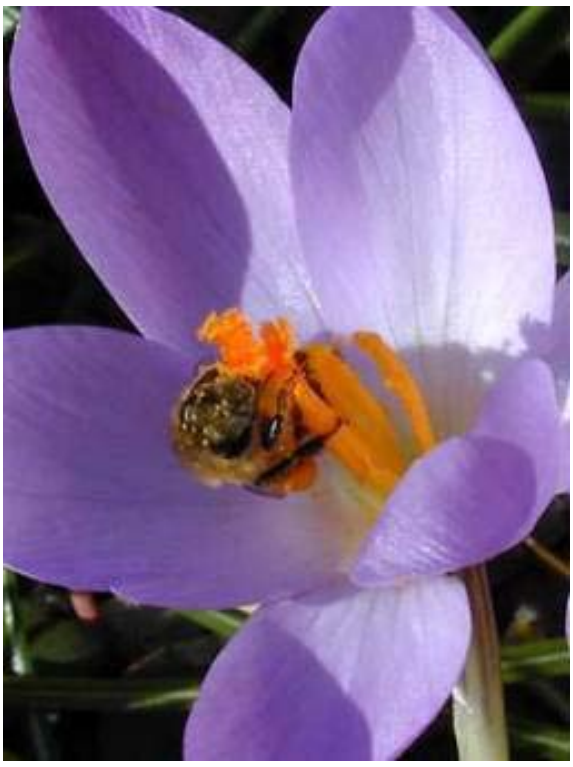


Left: Crocus caspius. A yellow three branched style which is characteristically hooked at the tips.

Below: Crocus tournefortii. A much branched orange style, an attractive feature of some species. Note also the yellow filaments holding white anthers.

Above right: Crocus banaticus. Many branched style, purple, unique to this species.

CROCUS POLLINATION and SEED



Pollination is achieved by bees, moths and beetles. The relatively heavy pollen is not adapted for wind pollination although many species flower in windswept places.

Crocus etruscus pollinated by a bumble bee in early spring. (UK garden grown.)

Seed capsules emerge towards the end of the growing season as the leaves die away.

Seed capsules have three locules (compartments) and can contain many seeds. The seeds vary in size and in their surface features. (many more images of crocus seeds can be seen in the SRGC Forum.

Crocus scharojanii seeds.
(Magnified - Actual size is approx 1mm diameter)