



...going one step further



T21026

(1000535)

Pea (*pisum sativum*)

English

General

Due to its flower structure, the pea from the Eastern Mediterranean belongs to the papilionaceae family (fabaceae; out of date: papilionaceae), which are combined in the leguminous plants (leguminosae) category together with other families due to the special flower structure (legumes; 9).

The papilionaceae family world wide comprises approx. 700 species with about 17,000 types and occur as (climbing / twining) herbs, bushes or trees. The roots develop so-called root nodules which contain symbiotic bacteria of the rhizobium species and which are able to fixate nitrogen from the air which is why some types are also planted for green manuring. Many types prefer earth with low nitrogen and high lime content.

The *pisum* (pea) species is one of the old agricultural crops of the temperate latitudes known since the early Stone Age which is planted in numerous sorts.

The pea shows typical herbaceous growth whereby it is included with the remodelled leaf primordiums for twining with the climbing varieties.

It is an important edible plant. The seeds (10) have no endosperm and both the cotyledons they contain show high protein and fat contents.

Flower structure

The typical member of the papilionaceae family (12) is only symmetrical in one (vertical) plane and is thus zygomorphic. The double perianth consists of five green sepals (8) on the outside which are basically somewhat fused with each other. The calyx is slightly bell-shaped and the dorsal is a little saccate.

There are also five alternate (on the lacuna) unequal large, white, green-stemmed petals which can be recognised by descending aestivation.

The free rear / upper petal forms the banner (vexillum; 1) Both the free leaves (alae; 2) are at the front / on the side and enclose both the lower two petals fused at the edges yet free at the peak of the keel (carina; 3). The forward facing keel (carina) encloses ten stamens (male parts) and the top ovary.

The filaments of nine of the ten stamens form a right-angled, open at the top, fused tube (4) around the median ovary (5) while the tenth stamen covers this opening with a free filament. The anthers (anthers; 11) are free and open inwards as the style lengthens and the flower opens.

The ovary is only formed from one top carpel (5) which is fused with itself. The tip of the carpel forms the almost 90° sterile, lower, open tube-shaped style whose distal area has so-called style hairs (7, yellow part) on the top / inward facing strip. The fertile papillose stigma area is limited to the extreme tip (13).

Pollination

The stigma is in practically the same position as the style hairs so that foreign pollen brought from the abdomen hair coat of the insect can adhere to the sticky papillae of the stigma.

After the alternate pollination and fertilisation in 2 rows on the ovules on the placenta (6), the progeny (9) matures into a typical pod (legumes) which opens doublefolded on the growth seam of the carpel and in the area of the downward facing back nerve on the dorsal side and ventricide. The calyx (8) remains on the progeny.

The flowers are in a cluster of one to three. They give off the scent of honey and are frequented for pollination by rather strong types of bees (apioideae) for removing the nectar as the petals close tightly. The flower visitors land on the horizontally aligned keel (3) where a quick release / cleaning mechanism is triggered by the weight and resulting pressure of the landing insect. The anthers (anthers; 11) clamped in the keel empty themselves towards the inside and the pollen is concentrated through the opening at the tip of the keel on the style hairs and wiped off on the abdominal hair coat of the visitor to the flower.

English

Pea (*pisum sativum*)

- 1 Banner (vexillum)
- 2 Leaves (alae)
- 3 Keel (carina)
- 4 Filament tube (tube made of fused filaments)
- 5 Carpel (carpel)
- 6 Ovules
- 7 Style (stylum) with style hairs (yellow area)
- 8 Calyx (calyx consisting of 5 sepals)
- 9 Mature progeny = pod (legumes)
- 10 Mature seeds
- 11 Anthers (anthers)
- 12 Papilionaceous plant (complete flower)
- 13 Stigma (stigma)









