

FROM SEED TO SEED

Educational films on seed production



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Lettuce is a member of the Asteraceae family and the *Lactuca sativa* species, which is divided into four main types:

- Head lettuce, which includes butter head lettuce with smooth, barely indented leaves and Batavia lettuce with crispy, more or less indented leaves
- Romaine lettuces with an oblong shape and long leaves
- Leaf lettuce that generally does not form a heart, certain varieties of which have leaves with very frilly edges
- Asparagus lettuce or celtuce, cultivated especially in Asia, which is grown for its succulent stem and tender leaves.

An important characteristic of lettuces is their ability to adapt to the climate and the seasons. There are varieties that are particularly resistant to the winter cold or to heat waves and that are slow to bolt. There are lettuces adapted to all climate conditions.

▶ Pollination

The lettuce flower is called a capitulum. It is hermaphrodite and self-pollinating, which means that the male and female organs are in the same flower and compatible with each other. The flower is therefore autogamous.

There is a risk of cross-pollination between different varieties by insects, the hotter the climate the greater the risk. In some regions of the world, there are wild varieties of lettuce which can cross with cultivars.

To avoid crossing, two varieties of lettuce are grown at least several meters apart from each other in temperate regions and with an even greater distance in hot regions. The varieties can also be isolated using mosquito net cages. For this technique, see the module on isolation technics in 'The ABC of seed production'. The planting of different varieties can also be spaced out to avoid them flowering at the same time. Nevertheless, seed should be sown early enough so that the plant has enough time to produce seed.

Life cycle

Lettuce for seed is grown in the same way as lettuce grown for food. At least a dozen plants for seed are necessary to maintain good genetic diversity.

Much care is taken to select plants for the specific characteristics of the variety such as shape, colour or growing season. If you do not do this, you will lose these characteristics over time. Head lettuce has a heart of compact leaves. Batavia lettuce has crispy, incised leaves. As its name indicates, winter lettuce is cultivated during the cold time of the year and produces seed the following spring. It thus maintains its ability to endure low temperatures. You should remove plants that do not have the specific characteristics. You should also eliminate lettuces that have bolted and that have not completed their development cycle. They would only reproduce stunted lettuces.

Certain varieties of lettuce have difficulty pushing up the seed stalk through the head, above all when the head is very compact. Sometimes you can help them by carefully cutting a slit in the top of the head so that the fragile growth bud is not injured. Alternatively, you can remove the leaves surrounding the heart one at a time. The leaves tend to rot when the weather is humid. When this happens, they must also be removed.

Flowering lettuce can reach an average height of one meter and needs to be staked individually or in groups. Depending on environmental conditions, it takes between 12 and 24 days for seed to form after blossoming. The flowerheads of lettuces blossom gradually and therefore the seeds do not all mature at the same time. Buds, flowers and seeds are found on the same plant at the same time.

Seed maturity is determined by harvesting a withered capitulum and crushing it between the thumb and index finger. If the seeds do not separate and remain stuck within the capitulum, they must further mature. When the seeds easily fall out of the capitulum, they are ready to be harvested. The best seeds are found on the main stem of the lettuce. Weather conditions have a great influence on the seed harvest. Rainy, humid weather damages seed formation and too much humidity makes the seeds susceptible to fungal attacks. In certain regions, plants for seed should be grown under a shelter.

Seeds can be harvested in three different ways. The first mature capitula can be gathered, thereby ensuring at least a small harvest. Place a bucket, a bag or a sheet underneath the seed head and shake it so the seeds fall down.

It is also possible to wait until at least half of the capitula are mature and then cut the flower stems and place them in a large woven bag. Hang up the bag in a sheltered, well-ventilated and dry place. The seed can thus finish maturing on the plant.

In case the weather is bad during the maturing period, the third possibility involves uprooting the plants, putting a bag around the root to prevent the soil and stones from mixing with the seed and hanging the plants upside down in a dry, well-ventilated place. A good amount of the seeds will continue to mature.

► Extracting - sorting - storing

The flower stems should be completely dry when the seed are removed. The capitula are rubbed by hand and the majority of seeds come away easily. Unpollinated flowers will produce empty seeds. The flower stems can also be beaten in a bin or other large container. The seeds are sorted using sieves of different mesh sizes. Finally, the seeds should be winnowed to remove any remaining debris. The seeds are placed on a plate or a winnowing basket then breathed upon so that any light chaff is blown away. Take advantage of a breeze. Pour the seeds into a container placed on the ground outside and the chaff will be blown away. Place the container on a sheet in case there are gusts of wind.

The seeds are then poured into a plastic bag in which you should put a label with the name of the species, the variety, the year of production and the place it was grown. Storing the seeds in the freezer for several days kills parasite larvae.

Lettuce seeds are able to germinate for 5 years on average and up to 9 years or longer if kept in the freezer. When storage conditions are inadequate, lettuce seed loses its viability very quickly. A good seed plant can easily produce 10 to 15 grams of seed.