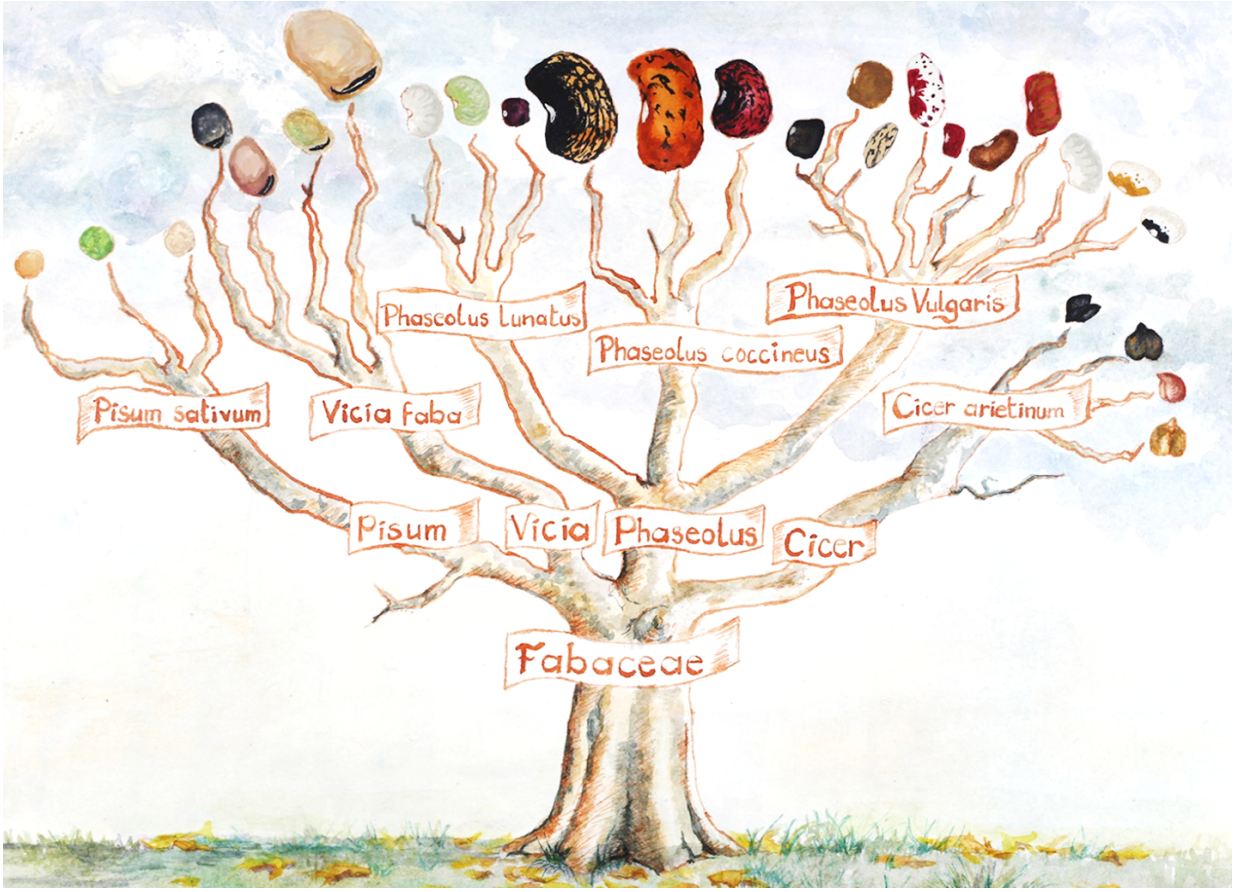
CULTIVATION INSTRUCTIONS:

# MULTIPLICATION OF LEGUME SEEDS

THE GLOBAL BEAN PROJECT

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## Producing your own seeds…

- will contribute towards maintaining a common heritage that has been developed over countless generations and that is fast disappearing
- will provide you with a wider range of varieties (other conditions as in commercial cultivation) and a diversity of plant characteristics (taste, appearance, possible uses ...)
- will bring further benefits such as a longer harvest window when the varieties are more diverse
- will give you greater autonomy and enable you to make your own selection of plants
- will enable the plants to adapt to your local conditions over time and to become more resistant to changing local constraints
- is an act of civil disobedience against increasingly restrictive laws that enable the big seed companies to gain total control over this source of life.

## Phaseolus beans

Beans are annual plants of the Fabaceae family. There are several species of beans, the most common of which are:

- Phaseolus vulgaris, which includes different kinds such as dwarf beans, semi-climbing beans and climbing beans. These two types of crops include beans grown for their pods such as green beans or for their seeds, eaten fresh or dried.
- Phaseolus coccineus or runner beans which are mostly climbing beans. They have very beautiful red or white flowers and are suited to temperatures below 25°C in order to set pods. Phaseolus coccineus has thicker pods than Phaseolus vulgaris.

## Faba Beans

Broad beans are from the Fabaceae family and the Vicia faba species. They are annual plants grown for their seeds that can be of different colours and sizes. They are also grown for their young shoots. There are different types of broad beans, some for human consumption and others for animal forage.

## Peas

Peas belong to the Fabaceae family and to the Pisum sativum species. They are annual plants. There are many varieties of peas:

- Peas which must be shelled and have seeds that are round and smooth. These are hardy varieties that mature early and resist cold.
- Peas which must also be shelled but have seeds that are wrinkled. These are less suitable for early sowing, but they are more resistant to hot temperatures.
- Edible podded peas. You can eat the whole pods when they are young, before the seeds have developed.

Climbing varieties that grow over 70 cm need to be staked. Dwarf peas that grow between 45 and 70 cm do not need staking. Among the Pisum sativum species there are also forage peas.

# POLLINATION

- Phaseolus coccineus: The flowers are hermaphrodite and cross-pollinating (allogamous), meaning they require insects such as bees and bumblebees for the pollination. Beans with cream-colored flowers can self-pollinate.

- Phaseolus vulgaris, pea flowers and flowers of broad beans are hermaphrodite and self-fertilising (autogamous), meaning they have male and female organs in the same flower and the fertilisation often already takes place within the flower.

- To avoid cross-pollination between different varieties, keep a distance of:

    - Phaseolus coccineus: 500 meters, with a natural barrier (such as a hedge) 150 meters. And a distance of 300 meters to vulgaris climbing beans and a 50 meters distance if it is a vulgaris dwarf bean

    - Phaseolus vulgaris: at least 5 or 10 meters between two varieties of beans

- Faba beans: The frequency of crosses varies from 5 to 60% depending on varieties, the environment and whether there are natural barriers. To avoid cross-pollination between different varieties, ideally keep a distance of 1 km, or at least 400 m for small-structured areas, with a natural barrier a few hundred meters.
- Peas: To avoid cross-pollination between different varieties, keep a distance of 15 meters, with a natural barrier a few meters.

In general: Other flowering plants between the varieties will further decrease the risk of cross-pollination. To preserve maximum purity variety despite a lack of space, you can cover each variety (before flowering starts!) with a mosquito net.

## LIFE CYCLE

- The technique for growing legumes for seeds is the same as for growing them for food. Beans require warm soil for sowing.
- Divide the crop into two sections: one for food and one for seed production.
- While the plants are developing, choose the most beautiful, healthy and productive plants for seed production.
- You should let all seeds mature fully. In this way you will preserve the precocity of the variety. To harvest the seeds, all you have to do is let the plants dry in the garden. If necessary, you can complete drying in a shed.
- For certain varieties, including climbing beans, harvesting time can be spread out. For certain species of dwarf beans, all pods dry at the same time, meaning that the seed harvest can be done in one go by cutting all of the plants.
- To make sure that the seeds are dry, bite one gently. If this leaves no mark, then they are fully dry.
- If the weather is damp and the seed-bearing plants are not completely dry, you can put them to dry in a well ventilated shed. It is important to protect them from insects with a net. Leave the seeds to dry for two or three weeks after harvest. To check they are ready, bite one slightly: if this leaves no mark, drying is complete.
- Faba beans:
    - This plant does not like high temperatures as this stops pollination and reduces production.
    - Sow broad beans either at the end of autumn in fair climates or at the end of winter when the soil is ready.
    - To ensure good genetic diversity, it is necessary to grow at least 10 broad bean plants for seeds.
    - Use the first pods, at the base of the plant for the seed production.
    - If the weather is wet, harvest the seeds before they are fully mature and leave them to dry in a dry and well-ventilated area.
    - Most of the time, the plants can be left standing to dry until the pods become black.

- Peas:
    - Some peas can be sown before the winter, but usually peas are sown early in the spring, temperatures should not be above 30°C.
    - Since it belongs to legumes, through a symbiotic relationship with Rhizobium bacteria, peas are able to "fix" atmospheric nitrogen in nodules on their roots. Garden peas are among the most highly efficient nitrogen-fixing crops and may obtain as much as 80% of their total nitrogen requirement. Grow at least 50 plants to ensure good genetic diversity and a better selection.

## EXTRACTING, SORTING, STORING

- For small quantities, shelling can be done by hand. For larger quantities, you can beat the pods with a stick. You can also walk on them or in the case of Faba Beans you can drive over them with a vehicle. In this case, make sure to place the harvest on soft ground so as to not damage the seeds.
- Once they have been beaten, you can sieve the seeds. The sieve will retain the seeds and larger chaff which can easily be removed. To reduce the small chaff, you can either blow it away yourself or use a mechanical blower, such as a hairdryer.
- Remove those that are of a different type, they are a sign of cross-pollination. Remove also damaged or badly formed legumes and those infested by weevils. The bean weevil (Acanthocelides obtectus), the pea weevil (bruchus pisurum) and weevils (bruchus rufinamus), are small insects that lay their eggs inside the pod on the plant. An easy way to get rid of them is to leave the seeds in the freezer for at least a week. The legumes must be properly dry before freezing and be stored in airtight packaging.
- Always write the name of the species and the variety, as well as the year of harvest on a label and put it inside the bag with the seeds. Writing on the outside may rub off.
- Putting the bag in the freezer or keeping them in a cool place (below 6 degrees) kills the larvae of parasites and prolongs their germination capacity.
- Bean seeds germinate very well for 3 to 5 years, Broad bean seeds for 5 to 10 years (even longer if stored at a low temperature) and Pea seeds for 3 to 8 years.

THE GLOBAL BEAN PROJECT

*The Global Bean project is a European and global network to promote and expand the use of legumes in our kitchens & their cultivation in gardens and fields.*

See further information, authors and references online:

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