Legumes

The **legume family (leguminosae)** is characterised by bearing fruit formed from a single carpel (or pod) that liberates its seeds by splitting open along both sutures into two parts. As well as beans and peas, leguminous plants also include trees such as the **Siberian Pea Tree** and **laburnum**, also **gorse**, **broom**, **clovers**, **vetches**, **cowpeas**, etc.

Leguminous crops are active nitrogen gatherers, potentially furnishing more nitrogen to the soil than **manures** and fertilisers combined. This is achieved through the process of **nitrogen fixation**, wherein **rhizobium bacteria** form symbiotic relationships with the legumes, and are able to convert nitrogen from the air into a form usable by the roots of the plant. These bacteria infect the plant, colonising and forming visible swollen nodules on the roots. These store nitrogen, an essential protein building constituent for healthy plant growth, for later release, making it available to following crops. However as **Robert Kourik** points out, in order to optimally use legumes as part of a soil fertility growing program it is important to understand the cycle of the plant; "Many of the pioneer plants, those benevolent colonisers of disturbed, damaged or infertile soils, are legumes. During the growing season, the nitrogen gathered by the legume's roots is 'banked' in a temporary savings account in the stems and leaves of the entire plant. When the plant flowers, the demand for nitrogen overwhelms the roots, and the plant draws on its savings account to make seed pods. Researchers have found that just before flowering as much as 60% of a legume's nitrogen is in the leaves, only half of it from root nodules. After seed pods are formed a mere 8% remains in the leaves, whilst 70% of the plant's total nitrogen has accumulated in the seeds. The roots and remaining nodules, after the leaves have matured, have even less nitrogen than the leaves- as little as 3 to 6% of the total accumulated by the plant. In short, legumes offer little nitrogen in a form other plants might use- they hoard it for the next generation." ('Designing And Maintaining Your Edible Landscape', Robert Kourik, 1986).

Bearing this in mind, an increase in available soil nitrogen is best optimised by cutting back the growing plant just before reaching the flowering stage rather than allowing it to crop and form seeds. Sowing a leguminous green manure such as vetches (Winter Tares), field beans, crimson or white clover and hoeing it into the soil surface at this stage is therefore an efficient way of increasing soil fertility within a rotation scheme. Not only do their root systems aerate the soil, when hoed in they add organic matter, bring minerals to the surface and make nitrogen instantly available without the problems of 'nitrogen robbery'. In regions that have not previously grown leguminous plants the necessary rhizobium bacteria necessary to form the nitrogen fixing root colonies might be lacking. In this case the appropriate strains can be added to the soil, or the legume seed can be coated or 'inoculated' with a culture which can be bought commercially. Inoculation can increase the
yields of peas and beans by as much as 67% in areas where rhizobium bacteria were previously low.

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Broad beans

The broad bean (Vicia faba) is the hardiest of beans and the only one which can be sown in autumn, survive winter frosts and be harvested in early summer. It grows as an upright annual that produces hairy pods. Beans are best harvested when young, for older beans are coarse and strong flavoured. Young seed pods can also be eaten, eg as a spring salad ingredient.

The ancestry of the broad bean is not known, although it most likely originated in the eastern Mediteranian region in Neolithic times, the earliest evidence of cultivation comes from pre-pottery neolithic Jericho and Hungary, as well as ancient Egypt c1800 BC. Broad beans are mentioned in Greek and Roman literature, and have been found in Iron Age deposits in lake dwellings near Glastonbury.
The ideal soil for growing broad beans is rich and free draining, but almost any soil will produce a crop provided it is not acid or waterlogged. Longpod varieties should be sown in a sunny spot from November, giving an earlier spring crop, increasing resistance to blackfly and taking advantage of the warmer autumn soils than those which follow winter. However these sowings may be vulnerable to slugs and birds during winter, and may also be damaged by severe frosts. Otherwise sowings can be made from January and February under cloches. Maincrop sowings, including Windsor varieties which produce fewer beans but with a better flavour, can be made from March to the end of May.

Broad beans should be soaked overnight to speed germination, then sown in double rows 8 inches apart, with 24 inches between them at a depth of @ 2 inches.

Germination should occur after a week to ten days. Regular hoeing will be required during the early stages of the crop's life, but watering should not be necessary until flowers begin to form. If the weather turns dry whilst flowers are developing generous watering will be required, and a mulch of compost or comfrey will be helpful.

Broad beans can grow tall, so may need support. Rather than providing individual canes, stakes can be placed at each corner of a double row, then string run between the stakes and around the plants. Once pods begin to form the growing tips of the plants should be pinched out. This should reduce the incidence of blackfly, a major pest of broad beans. Planting flowers, eg, limnanthes, buckwheat or nigella, which encourage predators such as hoverflies and ladybirds will also help to keep blackfly populations in check. Infestations can also be controlled by spraying with soapy water, or liquid derris, a permitted organic pesticide which should none the less be used judiciously and only when absolutely necessary, taking care to apply only in the evening when foraging bees will not be about.

The other significant disease of broad beans is Chocolate Spot Fungus, which will attack if the plants are short of potash. This can be prevented by adding wood ash at half a kg to four square metres, or mulching with comfrey. In the event of an attack, it can be remedied by watering with liquid seaweed or comfrey fertiliser.

The harvesting of broad beans can begin when the pods are 2-3 inches long at which time they can be cooked whole as an early summer dish. Otherwise they should be allowed to mature as a maincrop. Beans for shelling are ready to pick when the beans have begun to show through the pod, but before the scar on each shelled bean has become discoloured from white or green.

**Longpod varieties**

Long narrow pods, reaching 15" in length. 8-10 beans per pod. The best choice for high yields, hardiness and early cropping.

- Aquadulse (white) The popular choice for autumn sowing. Tall prolific and hardy
- Imperial Green Longpod (green) A well established favourite, maximum yields and long pods
- Relon (green) A giant bean- pods up to 20" long with 10 beans to a pod. Good for freezing. Suitable for exhibiting.
- Bunyards Exhibition (white) A reliable old favourite, good flavour, good yields
- Masterpiece Longpod (green) An early cropper with a good flavour
- Express (greenish white) A fast maturing bean and a heavy cropper- suitable for a spring sowing
- Red Epicure (reddish brown) A distinctive variety- red beans turn yellow when cooked

**Windsor varieties**

Shorter pods than the longpods. 4-7 beans per pod. Slower growing and not suitable for sowing in autumn.

- Green Windsor (green) A heavy cropping variety of good flavour
- White Windsor (white) A white seeded counterpart of the above

**Dwarf varieties**

The dwarf freely branching varieties grow to about 12-18" high, making them a good choice for exposed areas. Good for growing under cloches

- The Sutton (white) A popular dwarf - ideal for small gardens

**See also**

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**External links**

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