

---

# GARLIC

**CROP PRODUCTION  
GUIDES**  
June 2007  
Ref: 020105



---

Garlic, *Allium sativum*, is a member of the onion family. It is used for both culinary and medicinal purposes. Almost all garlic is grown from garlic cloves, although research into production from true seed has been on-going for several years.

## SITE

Garlic needs a warm, well drained soil to promote rapid growth and prevent bulbs from rotting. The soil needs to be well worked so that it does not restrict the bulbs as they are swelling.

Garlic is moderately tolerant of acidity and will grow in pH ranges from 5.5 to 6.8, the upper end of this range being preferable.

Ideally the rotation for garlic is six years – i.e. there will be at least five years where the site is used for a different crop.

## SUB-SPECIES AND CULTIVARS

Garlic divides into two sub-species: softneck (*Allium sativum sativum*) and hardneck (*Allium sativum ophioscorodon*); the neck is the “scape” or flowering stem. Softneck garlics are the more commonly sold type in Wales. Softneck garlics are the easiest to grow, are amenable to mechanical planting, have good storage properties and the softnecks allow them to be plaited. Hardnecks need more careful planting (the clove must be planted the right way up), they do not store as well as softnecks and their hardneck means they cannot be plaited. However, hardnecks can produce bigger bulbs, with attractive purple colouration in the skins, and they can command a premium price. Choice of sub-species and cultivars should be linked to growing conditions and labour / marketing schedules.

## PLANTING

Garlic can be planted in autumn or spring. Garlic from autumn (October) plantings will be ready for harvesting six to eight weeks earlier than a spring planted crop. Spring plantings should be made in February or March.

Within row spacing is around 5cm with between row spacing around 30cm (or to suit system and machinery in use). Target planting density is 50 cloves per m<sup>2</sup>. The top of the clove should be around 2cm below ground level.

## NUTRITION

Garlic has relatively low nitrogen requirements compared to many vegetable crops. Fertiliser regimes should be based on soil analyses and previous cropping history. Where levels of phosphorous and potassium are less than index 3 corrective applications of fertiliser should be made prior to planting.

## MANAGEMENT

The main management input during the growing season is control of weeds. Usually this can be done mechanically.

Opinion is divided on the need to remove the flowering stem (scape). Some producers maintain that this will result in an increased yield, other say the difference it makes is insignificant. However, there is a potential market for the scapes and this might be worth investigation.

## PESTS AND DISEASES

Garlic has relatively few major pests. Eel worms (*Ditylenchus dipsaci*) can cause devastating losses and persist in the soil for many years. Common early symptoms of eel worm infestation are discoloured and distorted leaves, followed by patchy death of the crop. Onion thrips (*Thrips tabaci*)

are another potential pest, particularly in warm seasons. Initial damage is seen as silvery patches in the leaves.

Potential diseases of garlic present a great challenge to growers. White rot (*Sclerotium cepivorum*) is a persistent disease which can infest soil for decades. Infestation causes bulbs to rot in the field. Symptoms include yellowing of leaves and a white cotton-wool like mould on the bulbs. Land infested with white rot must not be used for garlic (or any other allium) production.

The likelihood of many of the other common diseases of garlic can, to some extent, be reduced by cultural methods. In particular, weeds should be closely controlled and irrigation carefully managed (applied in the mornings to allow the crop to dry during the day, and never too much) to ensure good air-flow through the crop and avoid overly humid conditions.

## HARVEST

Garlic is ready for harvesting when most of the foliage has turned brown. Depending on the growing season, this can occur from July through to the end of August. Timing the harvest correctly is of critical importance: if the bulbs are picked too early they will not have achieved full size; if left too late they will be over-sized, split and may have become woody.

“Wet” garlic (freshly harvested, without being dried off), is something of a speciality product. It has a milder flavour than dry garlic and can command a higher price if there is access to a discerning market.

## STORAGE

Garlic which is not being sold “wet” needs to be dried down prior to storing. Careful drying and curing prior to storage are crucial to prevent losses. For small quantities, this can be done in any warm, dry place. Large scale production units require special facilities for crop drying and curing. The optimum temperature for initial drying is 28°C, until the skins are dry. A further period of “curing” is then required (25°C for up to two weeks). Once cured, the bulbs can be stored through the winter in a cool (>5°C) dry place for up to three months. Longer term storage requires refrigeration.

GARLIC AT A GLANCE	
<b>Planting time:</b>	October <i>or</i> February / March
<b>Planting density:</b>	50 cloves / m <sup>2</sup> - within row – 5cm - between rows – 30cm
<b>Planting to harvest</b>	
<b>Autumn planting:</b>	8 months
<b>Spring planting:</b>	5 months
<b>Yield:</b>	18,350kg / ha (~100 bulbs / kg)
<b>Retail price:</b>	15p – 50p / bulb

*NB – the yield per hectare and price may look attractive, but there is a limited market and competition is high. Ensure there is a market for the crop before planting it.*



Whilst every effort is made to ensure the information provided in this leaflet is correct, CALU cannot be held responsible for the consequences of any actions taken on the basis of its content. CALU is the Development Centre for horticulture, biomass, novel crops, farm woodlands and novel livestock in Wales. CALU is funded by the Welsh Assembly Government as part of Farming Connect

[www.calu.bangor.ac.uk](http://www.calu.bangor.ac.uk)

CALU – Supporting Sustainable Land Use