

## INTRODUCTION

Lettuce is no longer solely viewed as a garnish; it is a key component of a healthy diet. To satisfy the needs of modern shoppers for ready to eat food, there has been a significant increase in production of bagged salads. Prepared salads are one of the fastest growing sectors within the fresh produce industry. However, this is a demanding market where a high quality consistent product is required. Desirable characteristics include: rapid growth, early colour, robustness (to cope with washing and drying as well as being able to spring back into life in the bag).

This technical leaflet will focus on the production of conventional lettuces that can be either sold individually or grown to meet the salad bag market.

## CROPS TO GROW

Most lettuces are placed in the following groups: butterhead, crisp / Iceberg, Cos or loose leaf.

The choice of variety depends on a range of factors including: market requirements, uniformity, ease of growing, pest and disease resistance, geographical area, soil type, weather, and stage of the season. Before embarking on any new venture it is essential to ensure that there is a market for the product.



Polytunnel lettuce bed

## CONDITIONS REQUIRED

Lettuces will grow in a wide range of soil types, although the best results will be achieved in light to medium loams. Sandy loams will favour early production whilst clay / silt loams favour mid-season production, when temperatures and moisture stresses might be higher.

Good drainage is required and frost pockets and exposed sites should be avoided, although wind will help reduce wind borne pests and diseases.

Soil pH needs to be 6.5 to 6.8 (quite sensitive). Too much nitrogen will create soft growth prone to tip burn, rots, aphids and frost.

## PREPARATION AND PLANNING

If lettuces are being planted after a ley, ploughing to approx 20cm depth is required. Previously cultivated ground can be ploughed or rotavated to approx 12cm. Second cropping should be preceded by rotavation to reduce residual pest and disease problems.

Lettuces are best grown on a bed system where follow-on activities (planting, hoeing etc) are helped by following tyre tracks. The beds need to be level and uniform so that accurate layout of planting and weeding can take place.

## PROPAGATION

Although lettuces can be directly sown they are mostly grown in either blocks or modules. Smaller blocks make more efficient use of compost, larger blocks allow more growth time. Larger blocks are generally used for the production of crisp / iceberg types, where it is important to avoid any check at transplanting and where planting depth is critical. 150 or 240 modules hold enough compost to provide sufficient nutrition and are big enough to allow plants to develop.

Good hygiene is crucial to avoid damping-off and Botrytis type diseases. It is also important to ensure there is sufficient ventilation. Transplants must be 'hardened off' prior to planting out.

## PLANTING

Most lettuces are planted as transplants. Spacing is determined by head size, fertility levels, disease considerations and weed control. Generally, close spacing relies on rapid growth of the lettuce to out compete and shade weed growth whereas wider spacing allows more mechanical and hand hoeing. Recommended spacing are shown in Table 1.

**Table 1:** Suggested planting spacings for lettuces

	Little Gem	Cos, butterheads, loose leaf	Crisphead/icebergs
Row spacing	25cm	25cm	35cm
Plant spacing	17cm	30cm	30cm
Plant density	235,000 plants/ha	133,000 plants/ha	95,000 plants/ha

Continuity of production is essential due to the short harvest interval and therefore a large number of plantings are needed. To achieve this blocks / module sizes must be consistent and you must plant within 3 days of target date. Lettuces are a continuity crop: first plantings are usually made in March with subsequent plantings every 10 to 14 days.

### IRRIGATION

Irrigation is essential for optimum crop production; therefore blocks / modules must be moist at planting. Soil conditions should be near to field capacity a few days before planting and monitored throughout. As a general rule irrigate 12mm before transplanting and 12mm four days after. Subsequently aim to irrigate to match 50% balance between wilting and saturation. Do not over water within 7 days of harvest as this causes sliming and poor shelf life with fragile, easily damaged leaves.

Trickle irrigation is ideal, sprinklers create soil splash which makes lettuce unpresentable.

### PESTS AND DISEASES

The major disease problems of lettuce are downy mildew, ring spot and various rots such as grey mould. Slugs are the major pest, closely followed by aphids. Depending on location, soil type and weather leatherjackets, cutworms and wireworms may be also cause problems.

### WEEDING

As with most leaf crops you need to ensure there are no perennial weeds in the beds. Start hoeing approximately 3 weeks after planting so the weeds are dealt with before they are 1cm in height. Mechanical weeding will take 5-6hrs/ha, whereas hand hoeing is likely to take 20-25 hrs/ha.

### USE OF CROP COVERS

The use of crop covers to protect lettuces from pests, diseases and frosts, or to speed up growth is common. However, their use is not cheap and needs to be factored into the margins. Fleece comes in a variety of widths and if laid by hand will take 12.5 man hours / ha. Normal 17gms/m fleece costs approx £1.2k per hectare. Fleeces need to be folded back for weeding. Do not try to irrigate through the fleece. Often fleece is not put over the crop for a couple of days to allow the plants to get established.

### HARVESTING

Although growing lettuces is quite straight forward, timing of crops is crucial to ensure a sequence of fresh, uniform and well presented heads. Cold or warm spells during growth can result in a knock on effect with batches maturing at the same time, leading to gluts and shortages. A single planting of lettuces will normally mature over a 7 - 14 day period, requiring 2 or 3 cuts. In hot weather lettuces can become unmarketable in 3-4 days. They are best harvested first thing in the morning, normally by hand and removed within 1/2 hr of cutting. They should always be cut if the specification weights have been met. On a commercial scale cooling and cold storage facilities are required.

### MARKETS / ECONOMICS

Like many other crops continuity of supply will help maintain your markets, but prices are likely to be very variable over the season and returns will be heavily dependent on grade outs (rejects). Gross margins will depend on the market being supplied: margins from direct sales, for example, will be higher. Taking as an example supplying to a pack house you should be able to achieve gross margins of somewhere between £5,000-£7,000/ha for Little Gem and £6,000-£8,000/ha for Icebergs.