

## Introduction

As part of its long term plan to substantially reduce carbon emissions in the southern Hebrides, Sustainable Uist embarked on a local food programme in 2010 with the aim of reducing so called 'food miles' by encouraging more production and availability of locally produced food. Early on it discovered that very few home grown vegetables and salads were produced locally compared to other areas of Britain, and when asked why, local residents said 'it's too difficult'. Sustainable Uist set out to discover if this was true, if so what the reasons were, and if the difficulties could be overcome.

The work lasted for two years and was carried out on ½ acre of machair land at Liniclate on the island of Benbecula. In the first year around 50 crops were grown in 10 different ways using different cultivation methods. In the second, the best results from the first year were re-tested on a larger scale to confirm they were correct. This pamphlet sets out how the best results for a wide range of crops were achieved, and why it was not possible to grow some at all!

What we discovered is that there are three main factors which make growing vegetables and salads on Uist a lot more difficult:

1. The challenging climate – particularly the high average wind speeds all year.
2. The very poor soils.
3. The short winter and long summer days which mean plants behave differently to those growing in southern Britain.

The pamphlet starts with general husbandry guidance on nutrition, protection, seasonality and watering. Then six groups of crops are looked at in relation to these factors and we advise that most require extra fertiliser, extra protection from the wind, careful variety selection and hand watering at some stages.

The scope of this pamphlet is limited by available space and as a result we have not looked at potatoes (as these have been widely and successfully grown on Uist for generations), at growing on peat soils which have some different issues, nor have we given general gardening advice (see book list at end) or looked at the use of greenhouses, which can offer lots of advantages, but are expensive to buy.

Finally, if you can, find an experienced grower near you to seek advice from!



Vegetable and Salad Growing in Uist Machair Soils

## Nutrition

Vegetables, in common with all plants, need a steady supply of the right nutrients to allow them to grow properly. There are three types:

1. Main: Nitrogen (N), Phosphorus or phosphate (P) & Potassium or potash (K)
2. Secondary: Magnesium (Mg), Calcium (Ca) and Sulphur (S)
3. Micro: Iron (Fe), Zinc (Zn), Copper (Cu), Manganese (Mn)

Most soils contain all of these nutrients to some degree. However, different plants need them in different quantities, and every time a crop is harvested, nutrients are removed, so that over time the soil becomes depleted. In addition, some types of soil are naturally fertile, others much less so, and one of the main problems for gardeners, growers and crofters on Uist is that both the peat and machair soils are particularly infertile. This means that providing the correct nutrition for cultivated plants for cropping is important and needs to be thought about every season when growing vegetables on the machair.

You can provide your vegetables with nutrients from four main sources:

1. **Organic composts and manures** which derive from vegetable matter and on Uist come from seaweed, animal manures and homemade compost. These contain a wide variety of nutrients and are usually dug into the soil at the start of the new growing season.
2. **Compound fertilisers** such as 'Growmore' (pelleted) and 'Miracle Gro' (liquid) which are mostly made from oil and contain designated quantities of N, P and K and in the case of Miracle Gro a number of vital trace elements too.
3. **Organic compound fertilisers** such as 'Baby bio' and 'bonemeal' which are made from plant and animal products. These can have a bias towards one type of nutrient.
4. **Plant supplements** which are made up to supply particular plants with particular nutrients they need. Tomato feeds are a typical example, and others contain extra quantities of iron, magnesium etc.

Organic composts are slow acting and can provide a steady supply of nutrients over a number of seasons. They also help to bind the machair sand particles together and hold moisture. The other types are fast acting, but do not last in the soil for long and may need application more than once during the season.

Commercial farmers and growers now have their soils tested regularly to check on nutrient content, and you can do this using a testing kit or sending a sample off to the Department of Agriculture. However because the machair soils are all quite similar, the following guidelines for growing vegetables on the machair should suffice:

- Machair soils are very alkaline so do not need lime at all.
- In their basic state they contain very little N and K, but some P.
- They also have plenty of calcium and magnesium, but are short of iron and manganese.
- A good application of seaweed at the beginning of each season – say 8kg/m<sup>2</sup> (15 lbs/yd<sup>2</sup>) will provide most of the nutrients your crops require.
- As machair soils are low in potash, and seaweed doesn't contain a great deal, we found that an application of extra potash fertiliser helped provide the best results.
- If you can't get access to seaweed, rotted farmyard manure is the best alternative, but may contain weed seeds which will need controlling. This can be applied at about half the rate of seaweed.
- Failing that, you should apply a general NPK fertiliser such as 'Growmore' at the rates shown on the packet.

General advice on how much different crops need is given in the following sections. In general the simple rules are as follows:

- The bigger the plant the more feeding it needs.
- Pelleted and particularly liquid feeds will need more than one application.
- Whilst nutrients from composted manures hold in the soil for months and even years, pelleted and again particularly liquid feeds get washed away quickly into the subsoil and this can affect the environment and water supply. Small, regular applications help to reduce this problem.

Finally, it is always a good idea to grow different crops in different places over a three year cycle, a process called rotation. This helps to reduce the possible build up of pests and diseases as well as reducing the amount of fertiliser used, as less hungry crops can be planted after more demanding ones without adding very much more fertiliser.

## Protection

Uist is one of the windiest places in the UK. The annual average wind speed here is twice that in the south of England and the damaging effect it can have on plants is exaggerated by the proximity to the sea and lack of natural shelter. Some of the damaging effects of wind we have seen on growing plants on machair soils are:

- Physical damage to leaves, flowers and stems
- Wind carried salt and sand burning and scouring tender leaves and shoots
- Moving sand at the soil surface which can cause seeds to be uncovered
- Moisture loss from the soil and plant leaves

During our trials we saw that this damage affects all vegetables to a degree, though brassicas, with their tough leaves and stems, are probably the most tolerant, although even these can get damaged eventually. Investing in wind protection is vital to successful vegetable growing on Uist.

Traditionally this was done using stone walls and most Uist crofts had a 'kale-yard' or 'gàradh-càil' near the house. Walling isn't a practical option today and we have used two alternatives which have worked well in practice.

The first is to surround your vegetable plot with a wind fence. This can be done in different ways such as using builders' safety fencing or old fish nets attached to a standard post and wire fence or wind netting from a garden store attached to posts and ropes. There are two keys to success – attaching the netting in as many places as possible as this will reduce the risk of tearing, and, making sure the fences are not too far apart as the sheltering effect of a 1m high fence is lost after about 8 metres (25').

The second is to cover your crops with woven polypropylene mesh. Usually called 'Enviromesh', this can be bought online from a number of sources in different shapes and sizes. Because of the wind this must be firmly fixed either to a rope or stones, or curved hoops of wire or water pipe which will keep the covers off your crops. Mesh also provides protection from insect and other pests.

We tested each vegetable crop with both types of protection and the one which worked best is given in the individual crop sections that follow.

## Water

Clearly all plants need water to grow. Some are better adapted than others to deal with too much or too little, but most vegetable crops need a steady supply. From a vegetable grower's viewpoint therefore, the regular Uist rainfall is very welcome and we have to worry less about watering by hand here than in drier parts of the UK. However, the sandy machair soils dry out very quickly and, as any extended dry periods here tend to happen in May and June, germinating seeds and young plants trying to get established at this critical time of year are particularly vulnerable. This problem is made worse by the wind which dries both soil and plant leaves, so regular watering during these periods is important. Most mature plants have bigger root systems and are more able to deal with water shortages, but leafy crops such as lettuce can taste bitter if not kept watered. The best way to monitor the amount of water in the soil is to buy a basic rain gauge (about £10 online). If your garden gets less than say 12mm (½") a week then you need to start watering. You can help reduce water loss from the soil by digging in plenty of organic matter in the spring and also mulching the soil surface when the plants are established. Wind fences and mesh covers will also help to reduce the drying effect of the wind on both the soil surface and plant leaves.

## Seasonality

Plants have evolved to grow at different times of year as part of their survival strategy. They contain hormones called *auxins* which react to environmental factors and trigger the plant into germinating, growing, producing flowers and fruits, and dying back at the optimum time. These hormones are reacting to three main factors – soil temperature, air temperature and day length. For any given day in the UK these three factors are obviously very different between Uist and, say, the south of England and this is why growers based in Uist have to be careful when following instructions on seed packets and in gardening books about timings. For each crop we have indicated if these should be changed. Some particular features of the Uist climate such as the short, relatively cool summers, but long hours of daylight in June/July can also make it difficult to grow crops which need time to ripen, or are best grown where day length is shorter. If your soil is right and you have good protection from the wind in place, but you still find a particular crop still won't grow properly, then this seasonality factor is likely to be the reason.

## Summer Brassicas

We found that all brassicas thrive on the machair as long as they are fed, watered and protected properly. Choosing the right varieties and staggering sowing and planting times correctly mean it should be possible to have crops to eat for up to 10 or 11 months of the year.

### General Guidance

**Seed or plant:** Plants raised in seed compost modules under cover are the best option.

**Timing:** Add two weeks to guidelines on seed packets for seed sowings – but we found that early April is a generally good time. Plant out by the end of June.

**Spacing:** Follow guidelines on seed packets. The spacings always seem too big when planting out, but brassicas are large vigorous plants (up to 1m across) and need plenty of space. The aim is to have leaves of mature plants just touching.

**Nutrition:** Brassicas are very hungry and need plenty of nitrogen. They also have a long growing season so a second application of fertiliser after 8 weeks is a good idea.

**Protection:** Brassicas are the hardiest of vegetables with tough outer leaves and stems, but even they are damaged by the wind on Uist. However, summer varieties have a shorter season which ends by September so wind fences aren't really necessary, and the covers required for pest defence are sufficient.

**Water:** Mature brassicas have large vigorous root systems and can usually find the water they need. Newly planted plants, however, need a steady water supply and should be watered every 2-3 days until they are properly established if the weather is dry at planting out time.

**Weeding:** One of the great attributes of brassicas is that because they are such big plants and shade out the ground around them they should only need weeding once – around a month after planting out. A way to eliminate the weeding problem altogether and give some protection against cabbage root fly is to cover the area where you plan to grow your brassicas with a thick layer of seaweed. Clear a small circle in the seaweed and plant your young brassica in the centre.

**Pests and Diseases (P & D):** The curse of brassica growers is a soil fungus called *club root* which causes plant roots to become deformed and ineffective. Luckily, the high alkalinity of machair soils is a good defence, but to stop this disease becoming established, brassicas (including roots like swedes, turnips and radishes) should never be grown in the same soil 2 years running, and 3 is preferable. Otherwise there are two insect pests which are the main problem on

Uist – *cabbage root fly* and *cabbage white butterfly*. For both it's the larval (caterpillar) stages that attack plant roots and leaves. The best method of protection is to use mesh crop covers and these should be put on and kept on from the day the plants go outside, including hardening off.

### Types and varieties

**Cabbage:** 'Derby Day' (early round) and 'Advantage' and 'Greyhound' (early pyramidal) all worked well. Cabbages stand well so can be cut over a period of weeks. In general summer cabbage cannot be stored outside a fridge after cutting.

**Calabrese:** The summer version of broccoli. 'Belstar' is an early flowering type, 'Fiesta' later. F<sub>1</sub> varieties will all flower around the same time so don't plant out too many of the same variety. When the heads form, cut the main central head as high up the stem as possible and you should get secondary side shoots forming for 2-3 months afterwards. Calabrese does not store well outside a fridge, but does freeze well.

**Cauliflower:** We found that cauliflowers do particularly well on machair soils. We grew 'All Year Round' and had huge heads to cut for our Uist Food Event in September – one weighed nearly 4kg! Cauliflowers don't stand for long in the field so need to be cut immediately they are ready. Plants can be big so wide spacings are essential. 'Snowball' also reported to do well.

**Red cabbage:** Red cabbages are another hungry crop – we grew 'Marner Lagerrot' and had excellent results with big plants and dense heads weighing up to 4kg. Red cabbages develop slowly and last well if left on the plant for weeks into the autumn. They can also be stored in a cool dark shed for 2-3 months over the winter. Potentially the biggest brassica plants – up to 1.2m across - so they need plenty of space. 'Red Rodima' also reported to do well.

**Seakale:** A wild perennial brassica native to Britain, Seakale grows along chalk sea cliffs in southern England. The cultivated variety was grown widely in Victorian gardens where over winter the plants were forced, much like rhubarb, by covering them with clay pots. The plants will produce a crop of young shoots in the early spring which are reported to be rather like asparagus. It is reputedly difficult to grow from seed, though we succeeded with our first attempt. If you have difficulty it is possible to buy root stock from specialist nurseries. Plants should be replaced and moved to a new location every 4 years.

## Roots

There are two main types of root vegetables – those related to the *umbellifer* (parsley) family such as carrots and parsnips, and those which are *brassic*as such as swedes, turnips and radishes. Commercial growers prefer sandy soils for all these crops so the machair should be (and is in many respects) perfect! As with growing most vegetables on Uist, if the conditions are right it is possible to get good results.

### General Guidance

**Seed or plant:** Direct sowing of seeds is the best option for all roots.

**Timing:** In the south of England most summer root crops will be sown out in the open from late March to early May, but we have never found conditions suitable on Uist at that time of year, though these dates can be achieved if cloches are used. Mid to late June seems to have been our optimum time, but other growers report that sowings in April and May can work OK. Soil temperature is the main factor and carrot and particularly parsnip seeds will simply not germinate if the soil is too cold, though brassica roots are less fussy.

**Spacing:** Follow guidelines on seed packets for sowings. However, the most important husbandry task for roots is correct thinning of young plants once they are established. If they are too closely spaced you will simply get small roots, so thin plants out to a spacing matching the size of root you imagine. This should be done as soon as possible after the seedlings start to grow as, if the plants get too big, the ones left will have their roots disturbed as the others are pulled out and this can interrupt growth.

**Nutrition:** Roots don't require a lot of fertility particularly the brassica types.

**Protection:** Swedes and turnips are the only crops we grew successfully without any wind protection, but they do need it against pests (see below). Carrots and parsnips do benefit from covers particularly in the autumn when gales can kill the leaves and stop development.

**Water:** Root seeds need just the right amount of water and drying out of the sandy soil can be a problem in the dry spells that seem to occur in June. Lines of seed should therefore be watered before and after sowings and re-watered every few days if rain doesn't arrive. Once the plants are established their long tap roots will find the water needed.

**Weeding:** Root crops should be kept clear of weeds, particularly carrots and parsnips, because as they are relatively slow growing, they are not good competitors, especially when young seedlings.

**P & D:** The main pest of carrots is *carrot root fly*. As with cabbage root fly the larvae burrow inside the roots. Whilst we never saw it at Liniclate we did hear reports of it on other parts of Uist, so protecting the crop with mesh covers will ensure it doesn't get established in your garden. Parsnips are generally pest free with the only serious disease of concern being *canker*, a fungal disease which affects the shoulder of the root causing black skin patches. Best protection is achieved by growing resistant varieties like 'Gladiator'. For the brassica roots *cabbage root fly* is the major problem here and this causes serious damage very quickly, with the result that even fast growing roots like radishes become inedible. The best method of protection is to use mesh crop covers and these should be put on and kept on from the day the seeds are sown.

### Types and varieties

**Carrot:** There are hundreds of different types and sub-varieties of carrot reflecting shape, size, season and colour. We successfully grew two early varieties 'Early Nantes' and 'Trevor' and two autumn/winter varieties 'Autumn King' and 'Rothild'. All gave good results and all stood well in the ground (despite being flooded at one point!). Carrots will also store over winter either in a clamp outside or in hemp (not plastic) sacks in a cool dark shed.

**Parsnips:** There are fewer parsnip varieties. We grew 'Gladiator' and 'Palace', both F<sub>1</sub> varieties. Parsnips develop much more slowly than carrots so tend to be smaller in size here if they cannot be sown until the early summer. Parsnips can be stored like carrots, but will also stand in the ground if it is well drained.

**Turnip:** We like 'Purple Top Milan' but there are many others. Less fussy about spacing, and as a result smaller roots will develop to full size after mature ones are harvested.

**Swede:** There are fewer varieties of swede these days. We grew 'Helenor' successfully with good sized roots resulting where we had thinned well from the start. 'Marion' is reported to be another good variety.

**Radish:** Again, dozens of different varieties – probably the easiest of all vegetable crops to grow. The key is not to sow too many seeds at one time, but rather a short row every two weeks or so. Rudolph, French Breakfast and Scarlet Globe all do OK.

## Onions

As with other root crops the onion or *Allium* family prefer well drained lighter soils such as the machair and so with the right care they should, and will, do well on Uist. There are two main physical types – bulbs (onions, shallots, garlic) and stems (leeks and salad onions).

### General Guidance

**Seed or plant:** Bulb onions are normally grown from sets, though they can be raised from seedlings if they are sown in the late autumn. Leeks are raised from seed in trays and placed into a dibbed hole 3-4cm in diameter and as deep as 75% of the length of the plant – typically 20cm. They are then just watered in – not firmed with a hand or foot. Salad onions can be sown direct, but a good alternative to ensure an early crop is sowing around 6 seeds in a single compost module and planting out the modules at around 20 cm intervals.

**Timing:** Onion and shallot sets are pretty hardy and can go out as soon as the land is reasonable in April/May. It is also possible to plant out onion sets in the autumn for an early crop. Garlic needs to overwinter as a plant in the ground, so it will do best on Uist grown in a greenhouse or cold frame rather than outside. In the south of England the rule is that garlic planted on Armistice Day (11/11) will be ready by Mid-summer's Day (21/6, but it can be planted as late as early January). Leeks need to be sown in trays inside in April and will be ready for planting out in late July/early August.

**Spacing:** Onions and leeks need to be kept weed free so a good rule of thumb is to allow enough space between plants to allow a hoe to easily pass through.

**Nutrition:** Both onions and leeks prefer well fertilised soils. Because *Allium* root systems are small, fertility treatments need to be evenly spread to avoid bulbs and stems of very different sizes.

**Protection:** Because onions, shallots and salad onions are hardy summer crops they don't really need any protection. Mesh covers will provide a better growing environment, but their weight will stop the stems developing properly so hooped supports are required, especially when the plants are young. Leek leaves will get stripped in autumn gales so mesh covers are required after September. Although the tops do get bent over and abraded, as these are cut off before cooking, this isn't a real problem.

**Water:** Alliums are in general shallow rooted so need to be kept watered in dry spells. Because leeks are planted deep they do not normally require watering once the young plants are established.

**Weeding:** Alliums are not good competitors so need to be hoed regularly.

**P & D:** On Uist all the alliums seems to be pest and disease free.

### Types and varieties

**Onions:** There are a number of different varieties available to home gardeners, and most can be ordered using your seed supplier. The main choice is colour – red or white. Red onions seem to be slightly more fussy about their growing conditions, but appear from experience to do as well as white varieties here. We grew 'Sturon' (white) and 'Red Baron' very satisfactorily; 'Radar' is reportedly good for over-wintering. Onions do not keep well in wet ground, so as soon as they are at the size required they should be lifted and laid out to dry in a covered area. Even so, because of the high humidity and mild winters on Uist we have found they don't store well here and tend to start re-growing by November. Bend over the stems in early – mid August to allow the bulbs to ripen and take the onions out of the ground before the end of August. Lay them on old fish trays or nets raised off the ground and try and get them as dry as possible for 4 – 6 weeks. When dry plait the withered stems (don't cut these off) and hang up your bunches of onions in a cool, dark, dry place. 'Hytech', 'Centurion' and 'Stuttgarter'

**Shallots:** We haven't tested these, but they should do as well as onions. Storage issues are normally avoided by pickling after harvesting and drying. The variety 'Vigramor' reportedly does well here.

**Garlic:** We have only grown garlic inside but it reportedly will do OK outside here too. It is best to buy in seed garlic suited to our cooler climate rather than plant out cloves from bulbs bought in a supermarket – the latter may well have come from Mediterranean countries! Garlic can be used 'green' when it comes straight out of the ground where the whole plant including stems and leaves can be used in cooking. Otherwise bulbs are dried and hung up, though as with onions, they tend to start re-growing here by October/November.

**Leeks:** We have tested a number of varieties including 'Musselburgh', 'Siegfried' and 'Bandit'. Of these 'Musselburgh' did best. Leeks can be left in the ground until needed. An issue with leeks on sandy soils is blown sand grains getting into the body of the leek and ending up lodged between the layers. Covers will help reduce this, but will not stop it, so the stems have to be washed carefully before cooking.

**Salad Onions:** We have successfully used 'White Lisbon' and 'Guardman' and Ramrod is another reliable variety. Also 'White Lisbon Winter' in the greenhouse over winter. Salad onions are not suitable for storage.

## Winter Brassicas

Winter brassicas do as well on the machair as those grown during the summer. However, the frequent rain and strong winds mean that choosing the right hardy varieties and providing good protection is important to achieving the best crop results.

### General Guidance

**Seed or plant:** Plants raised in seed compost modules under cover are the best option.

**Timing:** Keep to rough guidelines on seed packets for seed sowings – we found that May is generally a good time. Take two weeks off (earlier) for planting out times and anything put out after July will probably not get to full size.

**Spacing:** Follow guidelines on seed packets generally though slightly closer spacing can help provide mutual protection. See summer brassicas section for other tips.

**Nutrition:** See summer brassicas section. Winter brassicas have an even longer growing season so a third application of fertiliser after four months is a good idea.

**Protection:** Your winter brassicas are going to need wind fence protection to survive the big storms. They also need covers to keep off the summer pests. However, it is best to remove the covers when the pest risk has gone – say by September - as the constant wear of the mesh moving in the wind can damage tender areas of the plants, which can allow bacterial diseases to develop.

**Water:** See summer brassicas section.

**Weeding:** See summer brassicas section.

**P & D:** See summer brassicas section, and comment about mesh covers above.

### Types and varieties

**Cabbage:** There are plenty of different types of winter cabbage – perhaps the best known are the hard white and Savoy. We grew ‘January King’ and the Savoy variety ‘Vertus’. We are still not sure if ‘January King’ is suited to Uist machair soils as a good proportion didn’t head up properly in both seasons they were tried. All winter cabbages will stand well in the field until the days start to lengthen in February. The hard white Dutch varieties such as ‘Marnier Lagerweiss’ and ‘Holland Late Winter’ will store well if kept in a cool dry shed.

**Calabrese:** Even though this is essentially a summer crop, some varieties will flower until quite late in the year if timing is right – we cut our ‘Fiesta’ in November and picked side shoots for Christmas lunch.

**Cauliflower:** It is possible to grow cauliflowers all year round and seed catalogues identify types that will flower in every month of the year. We grew the mid-winter variety ‘Belot’ and this flowered in time for Christmas and on into January. Winter cauliflowers will stand a little longer than summer ones, but once they are cut, it isn’t possible to store them for any length of time.

**Brussels sprouts:** Perhaps the best known mid-winter vegetable, though modern varieties mean it is possible to pick sprouts now from September to April. We grew three varieties ‘Nautic F<sub>1</sub>’ a tall standard type, and, thinking that short plants might do better in the winter gales, two dwarf varieties ‘Early Half Tall’ and ‘Seven Hills’. Nautic did very well producing an excellent crop from late November through to mid February. Neither of the dwarf varieties did well at all so they are probably to be avoided. ‘Berwick’ is reportedly another good variety which stands well in the winter.

**Purple Sprouting Broccoli:** Another classic late winter vegetable that with new varieties can be grown almost year round. We tested two varieties – ‘Early’ and ‘Rudolph’. ‘Rudolph’ started flowering at the end of November and ‘Early’ after the New Year. In both types the tender shoots were quickly damaged by the wind (and salt possibly?) and ended up unusable. Clearly this crop needs better protection than can be given by wind fences.

**Kales:** Kales were once grown quite widely on crofts as a winter feed supplement for sheep so are not generally considered a table vegetable in the Hebrides. However, they are hardy winter plants and can provide ‘greens’ from September through to March. The main types are green curly, red curly and so called black (very dark green). We tested ‘Dwarf Green Curled’, ‘Red Curled’, ‘Red Winter’ and ‘Nero di Toscani’ and all did OK, though were rather small. More vigorous varieties such as ‘Westland Winter’ would be worth trying.

## Spinach and beets

This is going to be a short section as, with the exception of beetroot, we have been unable to grow any of the spinach and spinach beet family successfully on the machair. The reasons are not clear, but are probably due to a combination of adverse factors including excess daylight in mid-summer, drying out, high alkalinity, low soil organic matter and poor fertility at depth. The main consequence of this is that all types and varieties had a tendency to bolt (ie produce flower/seed stems) far too quickly. Then, the few that did grow normally didn't thrive - a consequence probably due to their long tap roots (50cm +) which mean the plants are seeking nutrients down in neat, slightly saline sand rather than in the fertilised surface layer. It is possible to grow baby spinach as a salad leaf which should be cut when around 5cm tall.

These results are widely reported amongst growers on Uist, but one suggests trying an early sowing in a cold frame in very fertile deep soil as a possible solution. Best practices for beetroot follow.

### General Guidance

**Seed or plant:** Whilst beetroot can be direct sown most medium sized commercial growers use small plants raised in modules. 5 or 6 seeds are sown in a single module and raised under cover before planting out as one clump of plants.

**Timing:** One of the earliest garden crops, beetroot can be sown in modules in late March and planted out in April/early May. For direct seeded crops add two weeks to dates on seed packets. Note that seeds sown after mid-summer will not grow to maturity and produce roots.

**Spacing:** Follow guidelines on seed packets. Modules of plants should be around 30cm apart.

**Nutrition:** Beetroot like a medium fertile soil with plenty of organic matter.

**Protection:** Beetroot leaves can be damaged in windy weather so wind fences are useful, and mesh covers can protect very young plants.

**Water:** Need to be kept watered, but they will survive drier weather. Severe drying out, however, can cause them to bolt.

**Weeding:** Less affected by weeds than carrots, but plants will need weeding once before the leaves shade out the next weed set.

**P & D:** Pest and disease free.

### Types and varieties

Beetroot are either round or cylindrical – both do equally well here. We grew 'Boltardy' and 'Detroit' and both did equally well. 'Cylindra' is also reported to do OK. Beetroot grown using the module method should be harvested one by one, taking the largest first – the smaller ones will continue to develop. Roots should be topped as soon as they are lifted by twisting (not cutting) the leaves off, but they become soft after a few days if not chilled. Pickling is the traditional solution to long term storage, but use the weakest pickling solution possible to avoid spoiling the beetroot's own lovely flavour. Cooked beetroot can also be frozen satisfactorily. Beetroot can stand in the ground in early/mid winter if there is not too much frost, but will become woody as soon as the days start to lengthen as they get ready to flower.

### Courgettes and other Squash

As one might expect, these large leaved plants with fleshy fruits of many different shapes and sizes which originate from North America find the conditions on Uist difficult to thrive in without proper shelter. They will certainly do well inside a greenhouse, but outside they suffer from both the wind and the short, low temperature growing season. We had most success with courgettes, but the squash we managed to grow were very small and didn't ripen, and pumpkins failed completely. In this short section we therefore only look at courgettes.

**Seed or plant:** Courgettes need to be raised as plants inside in individual 6-7cm pots and planted out when they are around 15cm across.

**Timing:** We sowed our seed in May, put the plants out in late June and cut our first courgette fruits in mid August.

**Spacing:** These are big plants up to 1-2m across so need plenty of space.

**Nutrition:** Will do best in a well fertilised soil.

**Protection:** Wind fences are essential and the plants may need tying to a stake as well in very exposed locations because of their large size.

**Water:** Need regular watering if the weather is dry.

**Weeding:** Courgettes normally outgrow weeds.

**P & D:** Courgettes are susceptible to mildew which causes white patches on the leaves and rot in the flowers and fruits. This can be prevented by removing the yellow flowers as soon as the fruits are set and making sure the developing courgettes are kept the ground.

### Types and varieties

We successfully grew the F<sub>1</sub> variety 'Defender' both years of the trials. 'Bambino Zucchini' also reportedly does well.



## Summer Salads

Salads are not only one of the quickest and easiest crops for gardeners to grow, but can also be grown successfully for about 9 months of the year using a greenhouse during the winter. We shall concentrate here on those grown outside in the summer and autumn. There are two main types – lettuces which are well known, and a set of sundry shoot-type leaves sometimes known as Oriental Greens, which are mainly from that largest of vegetable crops - the *brassicas*. The keys to successful salad growing are variety selection and timing and if these are done carefully it should be possible to have a continuous supply from May to October. As the techniques for growing lettuces and leaves are quite different, two sets of guidance notes now follow.

### General Guidance: Lettuces

**Seed or plant:** All lettuces are grown as transplants, preferably inside. Sow one seed to a module and plant out when around 5-6cm tall.

**Timing:** Lettuces were originally an early cool climate crop, but many varieties have been bred which allow them to be grown at just about any time of year. It is important therefore to match variety to time of year. The following table shows the sowing, planting out and cropping timings for summer/autumn lettuce.

| Harvest month     | Sowing date            | Planting out date     |
|-------------------|------------------------|-----------------------|
| June              | 4 <sup>th</sup> March  | 10 <sup>th</sup> May  |
| July              | 18 <sup>th</sup> March | 10 <sup>th</sup> June |
| August            | 31 <sup>st</sup> March | 5 <sup>th</sup> July  |
| September/October | 18 <sup>th</sup> April | 25 <sup>th</sup> July |

**Spacing:** Plants should be spaced around 30cm apart, though small types such as ‘Little Gem’ can be a little closer and larger ones like iceberg a little further apart.

**Nutrition:** Lettuces can survive on limited nutrition.

**Protection:** Lettuce leaf tips can get burnt by salt laden winds so we used mesh covers to protect them in spring and autumn.

**Water:** Lettuce need plenty of water and should be watered regularly and thoroughly during dry spells, otherwise they will bolt.

**Weeding:** As lettuces are so quick growing, a quick hand-weed is all that is really necessary after 4-6 weeks.

**P & D:** On Uist, outside lettuce are generally pest and disease free.

### Types and varieties

We grew the following varieties successfully:

*Butterhead (soft leaved round types):* ‘Webbs Wonderful’, ‘Tom Thumb’

*Iceberg:* ‘Saladin’

*Oakleaf:* ‘Maserati’ & Bughatti’ (red), ‘Belize’ (green), ‘Lattughino’

*Lollo Rosso:* ‘Lollo Biondo’

*Cos:* ‘Little Gem’

A variety that does not do well is ‘Fristina’ as all our plants bolted immediately. Once mature, lettuces don’t last long either in or out of the ground during the summer.

### General Guidance: Salad Leaves

**Seed or plant:** Salad leaves should all be sown direct.

**Timing:** Salad leaves are mostly for early and late season use and if sown during mid summer will quickly bolt. Follow directions on packet. Can reach cropping size in 5-6 weeks.

**Spacing:** Follow directions on packet.

**Nutrition:** Salad leaves will grow with no extra nutrition.

**Protection:** Will benefit from mesh covers when young. Flea beetle is a major pest of small brassicas further south, but we have not seen it on Uist yet. The minute insects bore tiny holes in the leaves of crops like rocket and mizuna, but luckily the damage is purely cosmetic. Ordinary mesh will not keep flea beetle off as the mesh size is too big so an extra fine type is made for this purpose.

**Water:** Once established salad leaves normally survive without watering.

**Weeding:** As for lettuce.

**P & D:** Seem pest and disease free on Uist, but watch for flea beetle!

### Types and varieties

*Mixes:* Most seed merchants sell packets of mixed lettuce seeds known as ‘cut and come again’. These are sown direct, and when around 10 cm tall, cut with scissors or a knife around 3cm above ground level from where they will regrow.

*Rocket:* ‘Wild’, ‘Esmee’ ‘Rucola’

*Mizuna types:* ‘Mizuna’, ‘Mibuna’, ‘Komatsuna’

*Land Cress:* ‘American’

*Claytonia:* ‘Winter Purslane’

*Baby beetroot/spinach leaves:* as beet section/any variety such as ‘Palco F<sub>1</sub>’.

## Beans and Peas

Beans and peas are from the *Legume* family whose members have the unusual property of being able to take nitrogen from the air, fix it into a usable form and feed it into their root systems. This means they do reasonably well on most soils. However, they are in general warm climate crops and we found that the delicate flowers and leaves of French and Runner beans get damaged in the wind, even when protected. In addition, the flowers need insects to fertilise them and this is normally done by honey bees of which there are few if any on Uist. We tried to grow Runner and French beans in different ways using different varieties, but were unable to do this successfully. We will only therefore make recommendations for peas and Broad beans.

**Seed or plant:** Broad beans and peas are normally sown direct, but can be raised in pots or cardboard tubes first in a greenhouse for an early crop.

**Timing:** Peas and Broad beans can be sown as soon as soil conditions are reasonable – late May and early June seem the optimum times, but earlier sowings may be possible if warmer weather prevails in April.

**Spacing:** Follow seed packet directions. Because they fix their own nitrogen they can be sown reasonably close together and benefit from mutual shelter/support.

**Nutrition:** Not really an issue, but will produce more pods in a more fertile soil.

**Protection:** Wind fences are essential. Peas and taller types of Broad beans will need extra support to avoid being blown over and the usual method is to put a wooden stake or cane in at each corner of the block of plants and tie right round the outside several times with string. Pea plants are also usually supported with twigs or netting to keep them off the ground.

**Water:** The large seeds need watering in well to help them germinate (soaking for a couple of hours before sowing can help this in dry weather) but once established the plants don't seem to need extra water.

**Weeding:** Weed once after 3 weeks, but will outgrow weeds thereafter.

**P & D:** Broad beans are susceptible to 'chocolate spot', a fungus which causes brown marks on leaves and bean pods but seems to be only cosmetic in effect. They are also affected by black fly (a kind of aphid) at the top of the stems from around mid July. This can be stopped by picking off the growing tips when the plants are 90-100cm high – a good practice anyway as it will encourage the plant to grow pods rather than leaves. Further south the pea moth, whose tiny caterpillars burrow into pods and seeds making them unusable, can be a problem, but we have not seen this here.

## Types and varieties

**Broad bean:** We tried five varieties 'Sutton Dwarf', 'Aquadulce', 'Eleanor', 'Green Windsor' and 'Bunyards'. The older vigorous varieties did best so avoid new, smaller types.

**Pea:** We did not grow any peas. Other growers recommend 'Greenshaft' and 'Kelvedon Wonder' for machair soils.

## Further reading

There are dozens of books available on growing vegetables and salads. Recent ones tend to be glossy, faddish and include cookery tips too! Our favourites are:

**The Organic Garden Book** by the late Geoff Hamilton – out of print, but second hand copies available online. Buy this if you can – it's the best all round gardening book written for many years.

**The Vegetable and Herb Expert** by Dr D G Hessayon – from the Expert Books series. Good basic information.

**Grow your own Vegetables** by Joy Larkcom – lots of practical advice.

All of these are in Liniclate School Library to borrow.

## Sustainable Uist

Sustainable Uist is a community organisation dedicated to making the Uist islands more sustainable. In particular it is working to reduce CO<sub>2</sub> emissions from all aspects of islander's lives including waste, transport, energy and food. Its long term aim is to make Uist carbon neutral by 2030. If you wish to become a member you can do so through our website at [www.sustainableuist.org](http://www.sustainableuist.org) or phoning 01870 603 863.

## Acknowledgements

**Text:** David Newman

**Photos:** Steve Carter, David Newman

**Editors:** Christine Johnson, Jane Twelves, Jean Newman **Production:** Ruairidh Pritchard

**Help:** Sgiol Lionacleit crofting course students, Neil MacPherson, Marion Ferguson, Lisa Palmer, Sandy Davidson, Ali Menzies, John Alex Buchanan, Caley Timber, MacAulays.

**Financial Support:** CCF, CnES, Organic Gardening Catalogue, Community Energy Scotland.