Club Root factsheet
Mike Thurlow, Horticultural Advisor, October 2014

Club root (*Plasmodiophora brassicae*) is a major problem that affects brassicas grown on allotments everywhere. It is usually an inherited problem, generally as the result of the cultivation techniques of previous tenants over the years; the disease is a slime mould that can survive as resting spores in the soil for up to 20 years. So you can appreciate that your soil could have been infected as far back as 1994 at the latest!

There aren’t any chemical controls to control club root available to the amateur gardener at present. Calomel dust or paste was used in the past but this contained *mercurous chloride* and all calomel based products were banned from use in the U.K. in 1991, because *mercurous chloride* was recognised as being a poisonous chemical.

**There are three major contributors to club root.**

1. **Soil with a low pH.**

   All brassicas are calcicoles, lime lovers and require an alkaline/limey soil with a pH of at least 7.5. The most obvious reason for a low/acid soil pH is because it is a naturally occurring acidic soil. A neutral or alkaline soil can become acidic over time as a result of the regular use of high nitrogen fertilisers; especially sulphate of ammonia; or through the over application of manure or garden compost that will rob the soil of nitrogen.

   A simple pH testing kit that can be bought at most garden centres will measure the pH of your soil in minutes. A low pH can be raised by applying garden lime to the soil. Though it isn’t possible to raise a very low pH to the correct level in one application. This can only be achieved over several seasons; it is much more difficult to lower a high pH. But it can be helped by applying sulphur to the soil and by digging in manure or garden compost. Also it is important to monitor the pH of the soil over the years to be able to make the necessary adjustments in the management of the plot. Fortunately all vegetables prefer a high pH of around 7.5 to 8.0. Crop rotations are also an important element in reducing the risk of spreading soil borne pest and diseases around the allotment.

2. **Poor draining soil or high levels of rainfall** (*the rain could fall as acid rain, also contributing to the lowering of the soil pH.*)

   Club root slime mould flourishes in wet, poorly drained soils. The spores of the mould can survive for 20 years in soils that are poorly draining or excessively wet waiting to infect any member of the brassica family that is planted in to that soil. This is why it is critical that a heavy or water holding soil is drained to allow the free movement of rain/irrigation water through it.
If this isn’t a practical solution it may well be worth considering growing on a simple raised bed system where the soil is ridged up to allow the free movement of water. You may want to consider making a clean start by constructing a raised bed that is at least 1metre/3 feet high and filling it with fresh, clean soil - this will also help with carrot root fly problems.

3. Bringing in infected plants.

One of the most common sources of club root is accepting gifts of any plants but especially brassicas that are already infected with club root before you plant them. Never under any circumstances, unless you are 100% certain that the plants are club root free, accept gifts of plants or allow them anywhere near your allotment. Even a small amount of soil falling from the roots and landing on the soil can introduce the problem to your plot. You also have the additional headache, because of the fact that your soil is infected already, of not being able to raise your own plants because you will be further transporting the disease around your plot. Another complication is if the infection is wide spread on the site it will be spread from plot to plot by the soil on gardeners’ boots. An extreme example I agree but it is very possible especially on older sites.

Resistant Cultivars

The seed breeders are now developing strains of brassicas that are club root resistant and are able to grow and produce an acceptable crop on infected soils. You can also buy young transplants from most of the major seed companies and again they are offering the club root resistant cultivars for sale. Even if the roots are distorted by the disease the plant will still provide a usable harvest.