

Weed profile – Common Chickweed

Other names (chickenwort, craches, maruns, winterweed)

Latin name: *Stellaria media* L. (*Alsine media*)

All growers will be only too familiar with common chickweed (hereafter referred to as chickweed), for this annual or over-wintering native plant is one of the commonest weeds of cultivated land in the UK. In the ADAS Pest and Disease Incidence Report for the harvest year 2008 chickweed was reported as the most troublesome weed in all organic crops, but particularly in onion and leeks. For most of us it is a constant, that will always appear to reclaim any bare earth, should we give it the opportunity. I have always had a decent respect for this weed and been prepared to share my plot with it, recognising the benefits that weed presence and ground cover can give, but never considered it a huge problem. A fellow traveller but not as aggressive or difficult to deal with as some. Tim Deane, however, described hoeing off broad masses of chickweed 'as about the most dispiriting job of the lot,' which shows that growers can have different perspectives on weeds. I'd previously reserved that level of opprobrium for couch, creeping thistle and gallant soldier. That attitude of benign coexistence with chickweed changed recently when weeding my late February sown carrots in the tunnel. I'd not kept on top of the trefoil undersown in my climbing French beans last summer (probably editing this journal...) and both the trefoil and chickweed had set seed. I returned from holiday this March (possibly another mistake, in grower terms!) to find a mass of weed choking the rows of carrots. Admittedly I was under the weather, suffering

uncharacteristically from 'man-flu' but as I grasped at handfuls of lush green chickweed, unable to tell where one plant ended and another began, let alone differentiate it from the spindly crop, I found myself virtually reduced to tears. Now I knew where Tim was coming from...

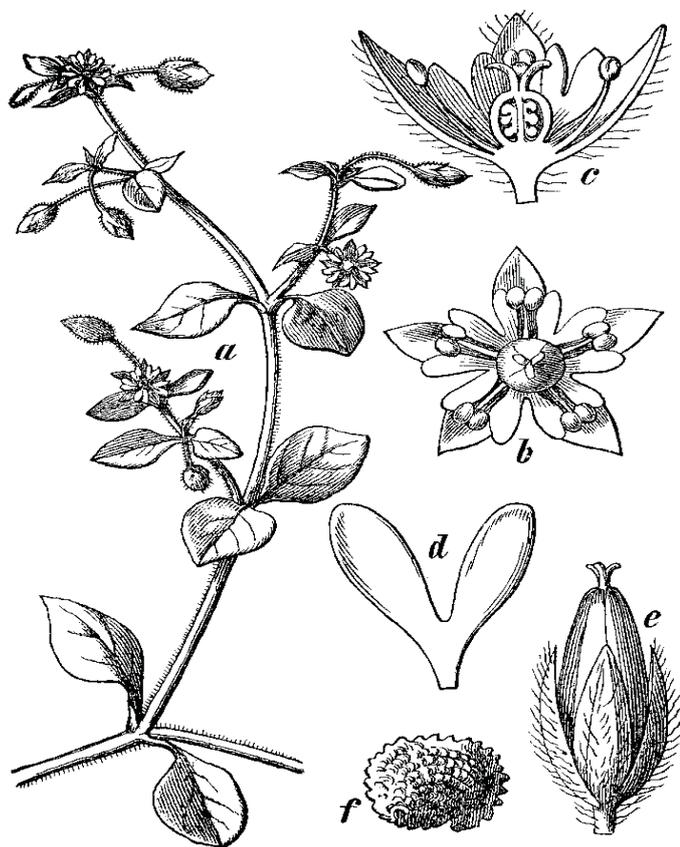
Habit and habitat

Chickweed is widely distributed over all soil types but is more abundant on lighter soils. It is favoured by high potassium levels and is indicative of high nitrogen and low phosphate and lime levels. The colour and health of your chickweed can be a good indicator of the fertility of your soil. On farms that we (Garden Organic/HDRA) monitored through conversion, chickweed often appeared yellow and sickly in the first year or two of vegetable cropping. It is absent from the most acidic soils. It thrives in areas of soil disturbance and declines when cultivation ceases for a long period. More power to the no-dig boys! It is sensitive to drought and is one of the first weeds to wilt in dry conditions. Chickweed grows best in cool, humid conditions and is a serious problem in over-wintered vegetable and flower bulb crops. It is moderately competitive and approximately 25 weed seedlings/m² will result in a 5% crop yield loss, according to Rothamsted research. (Compared to the most competitive weed, cleavers at 1.7seedlings/m², and the least - field pansy at 250 seedlings/m²).

Chickweed can be very variable in size, habit and general appearance. Some of this may have a genetic basis and some may be due to soil and environmental effects. Summer and winter forms with different growth habits are thought to occur.

Chickweed is a host of several damaging virus diseases of crop plants, including cucumber mosaic virus, tomato spotted wilt virus, tobacco rattle virus. Some viruses can be carried in chickweed seeds that will grow into infected plants. Cucumber mosaic virus can persist for at least 5 months in seeds buried in soil. Several important nematode species, including the trichodorus species that transmit tobacco rattle virus, can also infest chickweed.

If your chickweed has got out of hand you can console yourself that it is an important constituent in the diet of many farmland birds. It also has medicinal and therapeutic uses, is rich in vitamin C and may be eaten as a salad vegetable, a fact I point out if anyone complains at a stray bit of chickweed in my salad bags! It can, however accumulate nitrate and may become toxic to stock, though unlikely in an organic situation. In addition, it has a relatively high oxalic acid content and a low level of calcium that may have an adverse effect on dietary calcium bioavailability.



What makes it so successful?

The scary thing about chickweed is that it can flower and set seed all through the year, it has even been known to flower and ripen seed under a snow-cover 10-20 cm deep! Flowers are normally self-pollinated but there is a short period when insects can effect cross-pollination. In winter, flowers are produced that do not open, making self-pollination inevitable. Stems cut off in flower do not produce viable seed but any green immature capsules present will ripen and the seeds within them can become capable of germination. Hence, while you might think your chickweed is posing no danger, it is actually reproducing as if by subterfuge! Individual seed capsules contain around 10 seeds and the average seed number per plant is 2,200 to 2,700. However, plants with 25,000 seeds have been recorded! Chickweed can complete its life cycle in as little as 5-6 weeks, so if you turn your back, it can take over the holding.

Seeds will germinate at any time of year but particularly in spring and autumn. Germination can occur between 2°C and 30°C but the optimum temperature is 15°C. Seed collected from separate plant populations may differ in size and germination characteristics. Some seeds can germinate immediately after shedding. Buried seeds develop a light requirement for germination. In the field, seedling emergence declines with increasing depth of seed burial. Most seedlings emerge from the surface 30 mm of soil, seedlings from seeds buried deeper in the soil take longer to emerge. Chickweed is able to grow at relatively low temperatures and seedlings can survive all but the severest frosts.

Persistence and Spread

Buried seeds are known to retain viability for at least 25 and probably over 40 years. Seed buried in soil for 10 years gave up to 22% germination. Seeds in dry storage for 30 months at low temperatures retained full viability. Chickweed seeds broadcast onto the surface of clay and silty-loam soils, ploughed to 20 cm or flexible tine cultivated to 10-15 cm and followed over a 6 year period of cropping with winter or spring wheat declined at an annual rate of 35%. The estimated time to 95% decline was 7-8 years depending on the frequency of cultivation, echoing the phrase 'one years seeding, seven years weeding'. In a series of autumn-sown crops the time to 99% decline of seed in the soil seedbank was 11.1 years. The mean annual decline rate was 30%. In other studies in cultivated soil the annual percent decline was 41%. Elsewhere, under a grass sward, chickweed seed had a mean annual decline rate of 26%.

The seed capsule splits when mature and the seeds are shaken out onto the soil beneath the parent plant. The seed is dispersed further in mud on footwear and tyres. Ants also carry seeds away and seed has been recovered from irrigation water . . . Chickweed seed was a common contaminant

in cereal, grass, clover and other crop seeds. It remains a problem in home-saved cereal seed.

Chaffinches eat chickweed seeds readily. But it is not easily destroyed! A small number of seeds can survive passage through the digestive system of small birds and germinate in their droppings. Viable seeds are also found in cattle, deer, horse and pig manures and in worm cast soil.

Management

In cool wet conditions, chickweed comes into its own, forming a dense mat of spreading stems that may root at the nodes making it really difficult to hoe or pull up. As well as strangling plants it can also strangle the hoe, by wrapping itself around the shank or head, so that you are constantly having to stop and shake or pull it off. A poorly rooted brassica can be easily uprooted along with the weed. Hoed plants will root again in moist soil. Complete burial is the most effective treatment. In row crops, control is by repeated surface tillage in hot, dry weather (wishful thinking?). In cereals, increasing the sowing rate and reducing the row width help to suppress chickweed growth. Spring-tine harrowing in July is said to give good control of the weed. After harvest, stubble cultivations can give good control of freshly shed seed. The soil should be worked to a depth of 5 cm at 14-day intervals. Chickweed often emerges in winter when it can be destroyed by subsequent ploughing.

Mowing is not effective with this procumbent plant and may help the weed by removing the shading effect of taller species. On newly sown leys grazing by sheep may help to suppress common chickweed. It is grazed by many wild and domestic animals. Geese are said to eat chickweed selectively in certain crops.

A layer of compost or cover crop residue spread over the soil will reduce chickweed emergence. Leachate from composted household waste inhibits seed germination. There are indications that shallowly incorporating chopped straw after cereal harvest reduces seedling emergence. This may be due to the release of



Cotesbach chickweed

Photo: Phil Stumpton

toxins as the straw decomposes. Seedling numbers increase, however, following applications of organic manure.

There has been a lot of work on fallowing to reduce chickweed numbers, but fallowing is a negative and very expensive (energy, time, loss of cropping area and nutrients) way of dealing with annual weeds which ought to be controllable in other ways. Seed numbers in soil were reduced by 85% following a 1 year fallow and by almost 90% if this was extended to 2 years, by which time you would surely be in severe debt! The land was ploughed, disked and harrowed during each fallow each year. Weed numbers were reduced but to a lesser extent by cropping with winter wheat for the same period and carrying out normal control measures. Fallowing at 5-year intervals over a 15-year period did not reduce seed numbers in soil further because during the intervening cropped years the weed was able to ripen seed during cropping, after harvest and before ploughing took place. Seed that remained dormant in the soil during the fallow period allowed the weed to survive through to the next crop year and increase again. Even a 4-year fallow did not eliminate all the chickweed seeds in the soil. So perhaps a 2-year grass-clover ley, preferably grazed would be a better option.

Chickweed seedlings with 2-6 leaves are relatively susceptible to flame weeding (see flame weeding article p22) and the seeds are killed by soil solarization. Seedlings are very sensitive to UV-B radiation.

The seeds of chickweed are consumed by several species of ground beetle, so creating beetle banks or areas of longer tussocky grass will help. The fungus *Peronospora media* may be an important agent in the natural control of common chickweed.

As with any weed, tolerance to it will vary amongst growers and it is not all bad. In addition to the food value for birds and insects it can perform useful functions on the farm. Chickweed will cover the ground quickly and can be an effective green manure, protecting soil structure and preventing nutrient leaching when the soil is bare. A carpet of chickweed will also help deter cabbage root fly and other pests from finding the host-plant (crop), using Stan Finch and Rosemary Collier's theory of appropriate/inappropriate landings. Just be sure to prevent it seeding as much as you can, unless you are confident of dealing with it effectively at seedling stage.

Phil Sumption

Adapted from the review of Common Chickweed on the Garden Organic (HDRA) organic weed management website www.organicweeds.org.uk

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