

## The biology and non-chemical control of Ground-ivy (*Glechoma hederacea* L.)

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### Ground-ivy

(Ale hoof, creeping Charlie)

*Glechoma hederacea* L.

(*Nepeta glechoma*, *N. hederacea*)

### Occurrence

Ground-ivy is a perennial with creeping rooted stems or stolons. It is common in hedge banks, at the margins of arable fields and is sometimes found as a weed of arable crops (Long, 1938). Ground-ivy is typically a plant of shaded areas and is native in woods, grassland and waste places usually in damper, heavier soils (Stace, 1997; Clapham *et al.*, 1987). It is common throughout the UK. Ground-ivy is most abundant on sites with bare ground particularly on heavy and calcareous soils (Hutchings & Price, 1999). It also likes soils rich in phosphate and nitrogen.

In a survey of seeds in pasture soils in the Netherlands in 1966, while ground-ivy was common in the sward it was not represented in the soil seedbank (Van Altena & Minderhoud, 1972). In a 3-year set-aside, ground-ivy frequency declined with increasing distance from the field edge (Rew *et al.*, 1992).

Before the introduction of hops, ground-ivy was used extensively in brewing to flavour, clarify and preserve ale (Long, 1938). It also has medicinal and therapeutic uses (Barker, 2001). It has a wide range of herbal uses including as a diuretic, a tonic and an astringent (Mitich, 1994). Ground-ivy is reported to have caused poisoning of horses in England (Forsyth, 1968). The plant is toxic if ingested in large amounts either fresh or in hay but only horses are affected (Mitich, 1994; Frankton & Mulligan, 1970). Grazing animals generally avoid it because of the bitter taste. The plant contains a high level of iron and is a useful addition to the compost heap.

### Biology

Ground-ivy flowers from March to May according to Clapham *et al.* (1987) while Hutchings & Price (1999) maintain that the flowers emerge from the leaf axils between April and July. The flowers are insect pollinated (Grime *et al.*, 1988). The main period for seed set is June, however, seed set is often poor. The seed number of an average plant is 100 (Pawlowski *et al.*, 1970). Seed germination increases after a period of dry storage.

Regeneration is primarily vegetative. Shoots and roots can form at each node along the stolons (Hutchings & Price, 1999). Shoots persist for one season. Foliage is generally frost hardy but dry conditions can cause wilting and some plant losses. Ground-ivy overwinters as 2-leaved shoots (ramets) or 8 to 10-leaved rosettes. Growth restarts from April onwards.

There is some evidence that the leachate from ground-ivy has an allelopathic effect on other plants (Hutchings & Price, 1999).

### **Persistence and Spread**

Seeds remain viable in soil for only a short time according to some authors but other researchers suggest that small numbers may persist for long periods (Hutchings & Price, 1999).

Seed set is very variable and establishment from seed is rare in most habitats (Hutchings & Price, 1999). The seeds are passively dispersed but on contact with water the surface of the seed becomes mucilaginous and will stick to most surfaces. Vegetative spread is rapid. Ground-ivy forms patches by rapid stolon extension and is able to infiltrate other vegetation. Runners are frequently over 73 cm long (Salisbury, 1929). Detached shoot fragments may be important for longer distance dispersal (Grime *et al.*, 1988).

### **Management**

Ground ivy is rarely a problem on arable land but it has been found in quantity in lucerne (Long, 1938). Thorough tillage should eradicate it but shoot fragments are likely to root at the nodes.

In roadside verges, increased cutting frequency reduced the occurrence of ground-ivy (Parr & Way, 1988). In grassland, ground-ivy is often found in the disturbed soil around rabbit warrens but declines if the rabbits are excluded and the grass re-establishes (Thomas, 1960). It is generally avoided by rabbits (Gillham, 1955, Tansley, 1949).

### **Acknowledgement**

This review was compiled as part of the Organic Weed Management Project, OF 0315, funded by DEFRA.

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