The biology and non-chemical control of Selfheal (*Prunella vulgaris* L.)

W. Bond, G Davies & R Turner
HDRA, Ryton Organic Gardens, Coventry, CV8, 3LG, UK

Selfheal

(healall, touch and heal)
***Prunella vulgaris* L.**

Occurrence

Selfheal is a native perennial with short rhizomes found in grassland, lawns, wood clearings and rough ground (Stace, 1997; Clapham *et al.*, 1987). However, it has also been referred to as a stoloniferous perennial (Grime *et al.*, 1988). Selfheal occurs mainly in meadows, pastures and field margins in short or open turf except on the most acid soils (Barker, 2001). It can be an aggressive weed in turf and may be a problem weed in gardens (Copson & Roberts, 1991). It is common throughout Britain and is recorded up to 2,480 ft (Salisbury, 1961). Selfheal has some tolerance of shade. It has a preference for level, stony, medium textured soils with a moderate level of organic matter and a vegetation cover that is reduced by grazing or cutting (Dale *et al.*, 1965).

Selfheal is morphologically plastic and growth habit is affected by grazing intensity and by climate (Warwick & Briggs, 1979). In lawns, it has a prostrate habit, elsewhere it forms a loose clump (Schmid & Harper, 1985). Some plants produce only flowering stems, a few have just vegetative shoots and others have a mixture of the two. The proportion of shoots that remain vegetative or produce seeds is determined genetically (Schmid, 1985b). In Europe, annual and perennial races occur (Grime *et al.*, 1988). In a survey of seeds in pasture soils in the Netherlands in 1966, while selfheal was common in the sward it was not represented in the soil seedbank (Van Altena & Minderhoud, 1972).

Selfheal is used medicinally as a mouthwash and gargle for throat infections (Barker, 2001).

Biology

Selfheal flowers from June to September according to Clapham *et al.* (1987) and June to November according to Barker (2001). The flowers are self-sterile and insect pollinated (Grime *et al.*, 1988). Seeds are shed from August to October. There are 335 seeds per 4 flower spikes and the 1,000 seed weight is 0.60 g (Stevens, 1932). The mean seed number per plant is 850 (Sagar, 1970). The seed number of an average plant is 962 (Pawlowski *et al.*, 1970).

The germination of selfheal seed was greater at alternating temperatures of 20 to 30^{o}C compared with a constant 20^{o}C (Deschênes & Moineau, 1972). Seed germinated better in the light than in the dark. Germination was also improved by scarification. Seedling emergence was greater in bare ground than with a vegetation cover or a litter layer (Winn, 1985). Seed size had a significant effect on emergence, larger seeds had a higher percentage emergence in most situations.

A few of the seeds sown in a 75 mm layer of soil in open cylinders in the field and stirred periodically emerged in the autumn after sowing in October (Roberts, 1986). In the following year the seedlings emerged from February to October with peaks of emergence in April and September. Flushes tended to follow cultivations. A decreasing number of seedlings emerged in subsequent years and a few viable seeds still remained after 5 years.

Selfheal overwinters as a rosette of leaves (Grime *et al.*, 1988). The new shoots elongate in late spring. The creeping vegetative branches root and, sometimes within a season, the connections between the resulting daughter plants decay (Schmid & Harper, 1985). Clonal expansion is fast but shoot density is relatively low. Shoots die after flowering, which can cause the whole plant to die, but sometimes there is regeneration from the base.

Persistence and Spread

Seed is able to persist for at least 5 years in cultivated soil (Roberts, 1986). Seeds have been recorded in enormous numbers in the soil beneath pastures even though the plant may be poorly represented in the vegetation (Chippindale & Milton, 1934).

Selfheal regenerates from shoot fragments and from seed if the plant is disturbed (Grime *et al.*, 1988). Selfheal seed was a common impurity of grass and clover seed (Salisbury, 1961). In samples tested in 1960-61 in the UK, selfheal seed was found in 18.2% of Timothy seed samples of Swedish origin (Gooch, 1963). It was found in 3% of red clover samples of English origin and in 4-18% of white clover samples particularly those from England and Denmark. The percentage of grass and clover seed samples tested in Denmark showing contamination with selfheal seeds in 1927/28, 1939, 1955/57 and 1966/69 was 27.2, 35.1, 24.9 and 1.4% respectively (Olesen & Jensen, 1969).

Selfheal colonizes bare areas mainly by clonal growth (Schmid, 1985a). When neighbouring plants die or are removed, selfheal is able to colonize the free space quickly. In lawns, selfheal occurs in prostrate clonal patches but is able to flower and set seed (Warwick & Briggs, 1979).

Management

Selfheal is not a problem in the cultivated land (Morse & Palmer, 1925).

When selfheal occurs in leys and temporary pasture, control measures include a good dressing of lime on poor land. Grazing with sheep will reduce it, as will sowing clover into an infested pasture. However, in grazing studies selfheal was unaffected by different strategies of tight and lenient grazing in pasture (NERC, 2006). Mowing and trampling encourages prostrate growth with the creeping stems rooting at the nodes where they touch the ground. Self-heal tolerates rabbit grazing but has fewer erect shoots (Gillham, 1955). It is often abundant in short turf where it forms patches (Grime *et al.*, 1988). In longer grass it is dominated by the taller plants. Selfheal is rabbit resistant and flourishes where the vegetation is heavily grazed by rabbits (Thomas, 1963; Tansley, 1949).

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