The biology and non-chemical control of Sun Spurge (*Euphorbia helioscopia* L.)

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Sun spurge

(cat's milk, devil's milk, milkwort, Saturday's milk, turnsole, wartweed)
***Euphorbia helioscopia* L.**

Occurrence

Sun spurge is an annual weed of cultivated fields on sandy and clay loams (Long, 1938). It is common in cultivated land and waste places throughout the UK especially lowland areas (Clapham *et al.*, 1987; Stace, 1997). It is recorded up to 1,500 ft in Britain and was found in prehistoric deposits. (Salisbury, 1961). It prefers light ground (Morse & Palmer, 1925). In an early survey of Norfolk and Bedfordshire it was usually found on chalk and calcareous soils but was scarce to occasional in distribution. (Brenchley, 1913). Sun spurge was found in 8% of cereal fields but was more frequent in barley (Brenchley, 1920). It was rarely found in peas and beans. Sun spurge is common garden weed (Copson & Roberts, 1991).

Sun spurge bleeds a milky sap when cut which is an irritant if applied to the skin. The oil contained in the seeds is a violent purgative in man and animals (Morse & Palmer, 1925; Forsyth, 1968). The active principles in the seeds and foliage are not affected by drying. Sun spurge accumulates boron and may enrich compost to which the weed is added (Salisbury, 1961).

Biology

Sun spurge flowers from May to October (Clapham *et al.*, 1987). Seed number per plant is 600 to 700 (Guyot *et al.*, 1962). The average seed number per plant is 257 (Pawlowski *et al.*, 1970).

Seed that was tested after it had been stratified in soil overwinter gave 0 to 23% germination in the light and 0 to 42% in darkness with just a 5 second light flash or in complete darkness (Andersson *et al.*, 1997). There was no significant difference between treatments.

Seed mixed into a 15 cm layer of soil in cylinders sunk in the field and stirred periodically, emerged from April to October with most emergence from April to August (Roberts & Feast, 1970).

Persistence and Spread

Seeds mixed with soil and left undisturbed had declined by 71% after 6 years but in cultivated soil the decline was 96% (Roberts & Feast, 1973). The longevity of seed buried in soil at 24 cm was 22 years (Guyot *et al.*, 1962). Seed recovered during house demolitions and dated at 30 years old was reported to germinate (Ødum, 1974).

Seeds are dispersed explosively (Salisbury, 1961). The seeds bear an elaiosome in the form of a caruncle that is attractive to ants and this may aid seed dispersal (Pemberton & Irving, 1990).

In a survey of weed seed contamination in cereal seed in drills ready for sowing on farm in spring 1970, sun spurge seed was found in 2% of samples (Tonkin & Phillipson, 1973). All of this was home saved seed.

Management

Surface cultivations in spring and the tillage associated with root crops will keep sun spurge in check (Long, 1938; Morse & Palmer, 1925). It is important to prevent seeding.

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