The biology and non-chemical control of Dwarf spurge (Euphorbia exigua *L.*)

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Dwarf spurge
(Corn spurge)
***Euphorbia exigua* L.**

Occurrence
Dwarf spurge is a variable annual weed of cornfields (Long, 1938). It occurs on arable land but rarely elsewhere and is probably native (Stace, 1997). It is most common in S & E England (Clapham *et al*., 1987). Dwarf spurge is not recorded above 1,000 ft in the UK (Salisbury, 1961). In an early survey of Bedfordshire and Norfolk it was chiefly found on clay and heavier loams (Brenchley, 1913). Rarely dominant and often scarce, it appeared to be discouraged by root crops (Brenchley, 1920). Guyot *et al*. (1962) considered it to be more frequent on calcareous soils.

In a study of seedbanks in some arable soils in the English midlands sampled in 1972-3, dwarf spurge was recorded in 31% of the fields sampled in Oxfordshire and 13% of those in Warwickshire but never in large numbers (Roberts & Chancellor, 1986). Dwarf spurge is described as near threatened in the BSBI species status list 2005. In seedbank studies in arable fields in France, dwarf spurge was well represented in the seedbank and in the emerged vegetation (Barralis & Chadoeuf, 1987).

The plant exudes a milky sap when damaged. The sap is a severe irritant if applied to the skin (Forsyth, 1968). The oil contained in the seeds is a drastic purgative. The active principles in the seeds and foliage are not affected by drying.

Biology
Dwarf spurge flowers from June to October (Forsyth, 1968) or May to November (Hanf, 1970).

Seed mixed in pans of field soil emerged chiefly in winter and mainly in the second year after sowing (Brenchley & Warington, 1930).

Persistence and Spread
Seed longevity in soil is 6 to 7 years (Guyot *et al.*, 1962). Dwarf spurge seed sown in the field and followed over a 5 year period in winter wheat or spring barley showed an annual decline of around 40% (Barralis *et al.*, 1988). Emerged seedlings represented 8% of the seedbank.

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

Seed numbers in soil were reduced by 50% following a 1 year fallow and by 90% if this was continued for a second year (Brenchley & Warington, 1933). However, there

was a similar reduction in seed numbers when the land was cropped with winter wheat for the same period. Seedling emergence occurs only over a limited period in spring and hoeing and crop competition probably prevented seed return. Seed numbers often remained low in the first crop after fallowing but the weed was able to flower and set seed in the stubble that remained after harvest (Brenchley & Warington, 1936). Fallowing every 5th year over a 15-year period reduced seed numbers by over 90% after the first fallow year. Seed numbers were maintained at this level after each subsequent fallow year although seed numbers may have increased during the intervening cropped years (Brenchley & Warington, 1945).

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