The biology and non-chemical control of Corn Chamomile (*Anthemis arvensis* L.)

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Corn chamomile
Anthemis arvensis L.

Occurrence

Corn chamomile is a native annual, locally common on light arable land and waste places throughout the UK (Clapham *et al.*, 1987). It has a scattered distribution in southern England, the central Midlands and East Anglia. In East Anglia, distribution is centred around the Breckland area (ADAS, 1997). It is a calcicole and can act as a biennial (Long, 1938). Corn chamomile is found on lime-free, usually acid, loam and sandy-loam soils (Hanf, 1970). In early surveys of Bedfordshire, Hertfordshire and Norfolk it was found on sandy soils, chalk and heavier land but was rare on clay (Brenchley, 1911; 1913). It was not particularly frequent.

Corn chamomile was especially associated with temporary grass or clover seed crops (Brenchley, 1920). It is found in cereals but it also occurs as a grass seed alien (Stace, 1997). It prefers dryer areas with low summer humidity and is relatively tolerant of dry conditions. A long established weed of arable land on dry calcareous or sandy soils, corn chamomile is occasionally found on dry grassland (Kay, 1971).

It is an aromatic plant with a faintly scented foliage (Salisbury, 1961). Corn chamomile is phenotypically plastic and very variable in size and habit (Kay, 1971). Hybrids may occur with scentless mayweed (*Tripleurospermum inodorum* L.) but these are sterile. It is the least common of the annual 'mayweeds' and is described as endangered in the BSBI species status list 2005.

Biology

Flowering begins in late-May or early-June, reaches a peak in July and continues through to August (Long, 1938). Corn chamomile is able to grow new shoots when cut down during cereal harvesting and may flower again in the stubble in September (Kay, 1971). The ray florets around the outer edge of the flowerhead are female and the disc florets inside them are hermaphrodite but plants are self-incompatible and cross pollination is via a range of pollinating insects. The average number of seeds per flowerhead is 65-90. Seed number per plant is given as 4,000 to 5,000. An average plant is said to produce 2,100 to 4,200 seeds. In spring cereals the average seed number per plant ranged from 231 to 310, in winter cereals from 758 to 930 and in root crops from 2,040 to 2,227 (Pawlowski, 1966). The average seed number per plant was 1,272 in winter rape and 1,890 in red clover. The time from germination to fruiting is around 100 days (Guyot *et al.*, 1962).

Germination levels are increased if the seedcoat is removed. Corn chamomile seed germinates on the soil surface. Seed germination occurs mainly in autumn (September-October) and spring, but some seedlings emerge throughout the year. Corn chamomile is frost-hardy and can grow as a winter annual (Kay, 1971).

Overwintered plants come into growth in March, internode elongation of the flowering stems begins in late-April to early-May. (Hanf, 1970).

Persistence and spread
Seeds stored in soil for 11 years retained 47% viability (Kay, 1971).

Seed has been found in cattle droppings (Salisbury, 1961). Passage through the digestive system of a dove is said to improve seed germination.

In a survey of seed contamination in grass and clover seed in 1960-61, corn chamomile seed was found in 27.3% of perennial ryegrass, 30.5% of Italian ryegrass, 26.4% of meadow fescue, 14.8% of creeping red fescue, 6.4% of cocksfoot, 14% of clover and 21% of wild white clover seed samples of Danish origin tested (Gooch, 1963). In clover and grass seed samples tested in Denmark for the period 1966-69, 1955-57, 1939 and 1927-28, corn chamomile seed was a contaminant in 9.5, 32.5, 36.8 and 18.8% of samples respectively (Olesen & Jensen, 1969).

Management
The chief method of control is to prevent seeding through surface cultivations in spring and summer, and by the inclusion of root crops in the rotation (Long, 1938). Plants should be hoed-off or pulled up (Morse & Palmer, 1925). On poor land deficient in lime, the addition of 2 tons of lime per acre is said to aid control.

The larvae of *Apion sorbi* F. (Coleoptera) and *Homoeosoma saxicola* Vaughan (Lepidoptera) have been recorded on corn chamomile flower heads eating the receptacle (Kay, 1971).

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