

CHILLING REQUIREMENTS OF ASH (*FRAXINUS EXCELSIOR* L.) AND CLIMATE CHANGE

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Trees growing today and in the future face unprecedented rates of climate change. In the UK, the question arises as to whether native tree populations will be robust enough to regenerate and grow well to harvestable age or whether we should look further south for germplasm more likely to perform better under warmer climates. Common ash (*Fraxinus excelsior*) is a deeply dormant species whose seed requires chilling pre-treatment to ensure germination. Timing of spring leaf-flush is also influenced by winter chilling and is important as new shoots are highly sensitive to frost, leading to forking and poor form. Given predicted increases in temperature for southern England of 3 - 5°C warmer by 2080, there is concern that chilling requirements of local populations will not be met. We present results from studies of chilling requirements for seed germination and leaf flushing in the context of predicted climate change.

1. Seed from ten populations of ash were collected along a latitudinal transect (60°N-48°N) and given increasing periods of cold pre-treatment. Populations from more southerly latitudes germinated with minimal chilling (12 weeks cold pre-treatment) whereas populations from higher latitudes required increased chilling for germination (24 weeks cold pre-treatment).

2. Dormant twigs were collected from six populations (latitudinal range 55°N-47°N) growing in a provenance trial in southern England and assessed for flushing after different lengths of time in a cold store. For flushing to occur in approximately half the twigs, populations from Great Britain and Haute Saone (France) required 43 days of chilling; populations from Normandy (northern France) needed 29 days chilling and those from Romania required only 15 days chilling.

Keywords: chilling requirement, dormancy; phenology.

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