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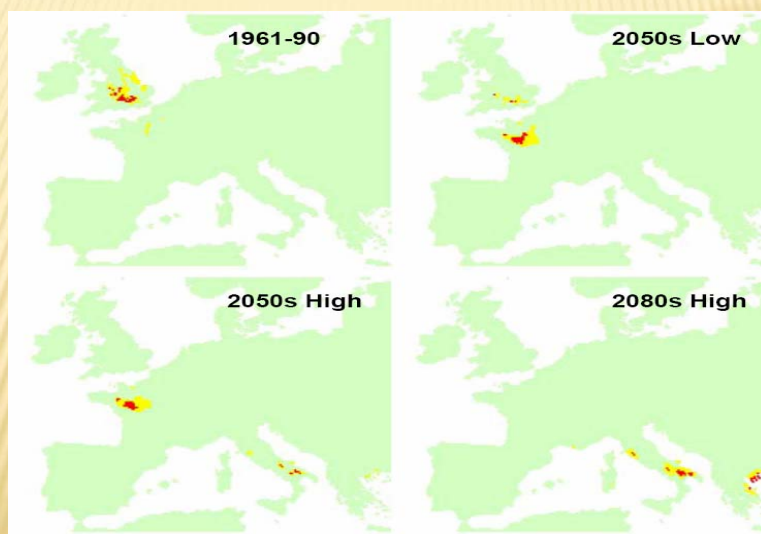
CHILLING REQUIREMENTS OF ASH AND CLIMATE CHANGE

Climate change predictions for UK

- 3-5°C rise in temperature
- Winter rainfall > 30%
- Summer rainfall significantly lower
- Wind speed changes uncertain, although storm track predicted to move south with increased deep depressions across south during winter
- Cloud cover decrease during summer, with associated drop in RH and increase in evapotranspiration
- Thus, summer drought is greatest constraint to tree growth.

Will our native species be able to survive and grow to be able to provide quality timber?

Climate Matching Analysis for Little Wittenham



Chilling Requirement of Ash

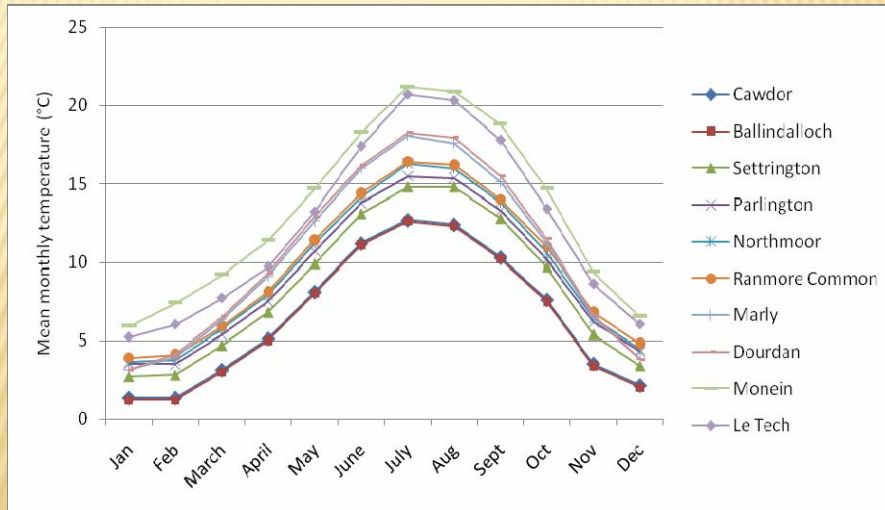
1. Seed dormancy
Important for natural regeneration
2. Bud dormancy
Important for growth and form

FRAXINUS EXCELSIOR SEED COLLECTION SITES

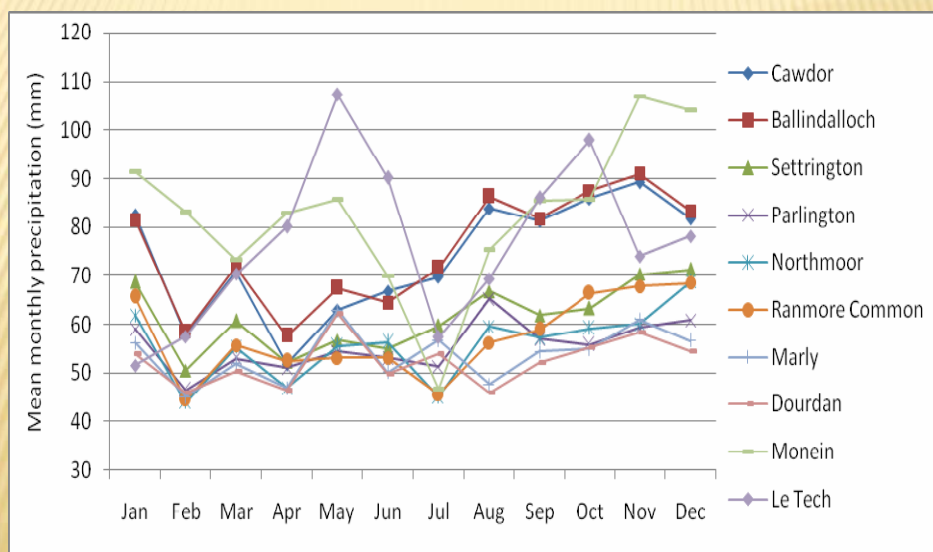


| | Elevation | m |
|------------------|-----------|---|
| Cawdor | 150 | |
| Ballindalloch | 220 | |
| Parlington | 65 | |
| Settrington | 110 | |
| Little Wittenham | 55 | |
| Ranmore Common | 200 | |
| Dourdan | 125 | |
| Marly | 115 | |
| Monein | 140 | |
| Le Tech | 800 | |

MEAN MONTHLY TEMPERATURES



MEAN MONTHLY PRECIPITATION



SEED COLLECTION

- Populations selected at 3° intervals N + S of Little Wittenham
- 20 trees per population
- 200g fresh weight from each tree and bulked
- Dried to 10% MC \pm 1% and stored prior to pretreatment
- Standard pretreatment is for 16 weeks at 15° C followed by 16 weeks at 4° C

ASH SEED DORMANCY

- Ash is orthodox – can be dried without harm
- Ash is deeply dormant – does not germinate even in favourable conditions for growth i.e. has an absolute requirement for pretreatment
- Dormancy due to:
 - Morphological – embryo is not fully grown
 - Physical – seed coat is impermeable
 - Physiological – chemical change needs to take place (chilling requirement)

Ash has all of these!