The New Zealand Institute for Plant & Food Research Limited

Development of low chill cultivars in New Zealand

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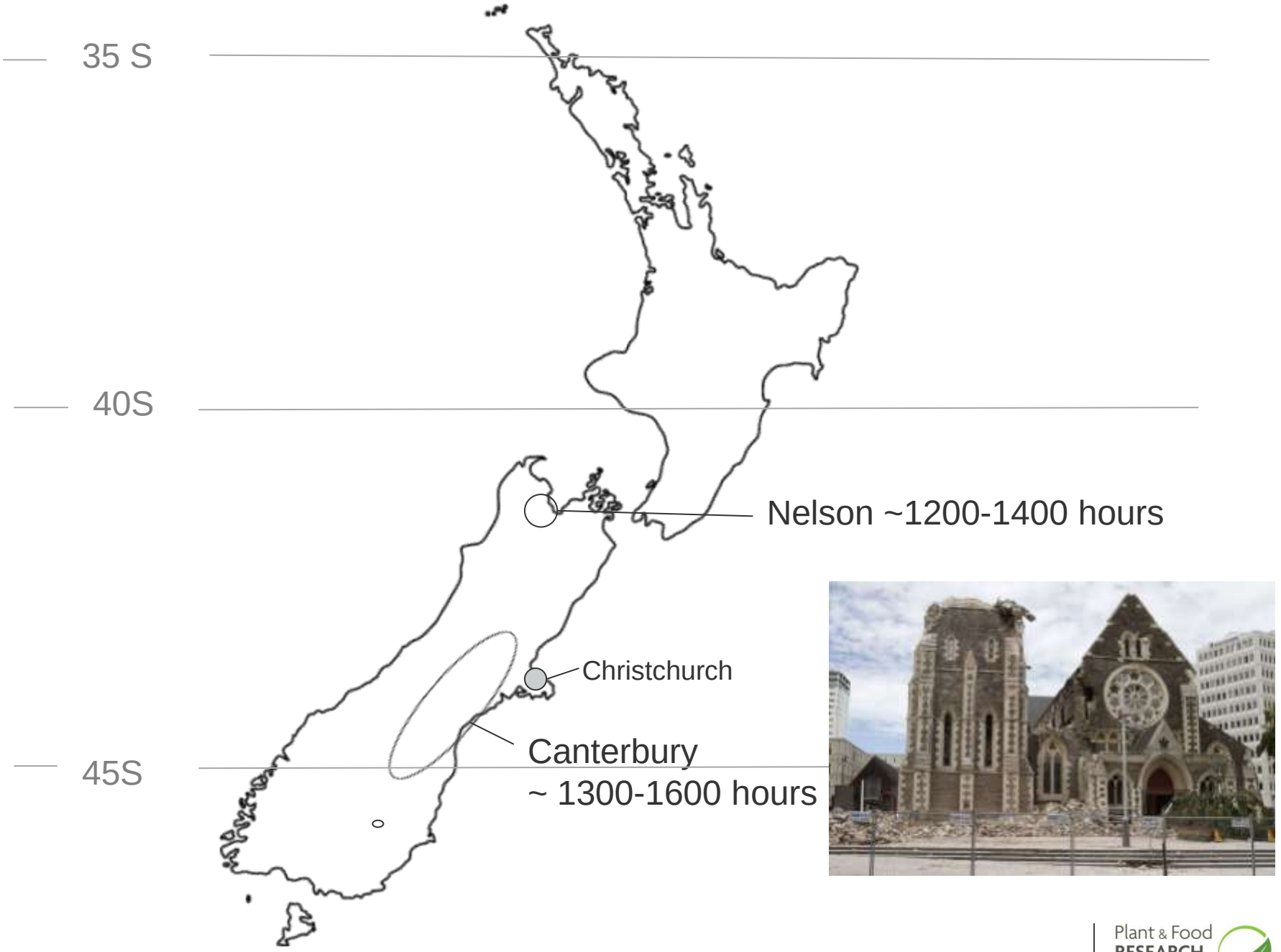

35 S
40S
45S
Nelson ~1200-1400 hours
Christchurch
Canterbury
~ 1300-1600 hours

Imported Cultivar Performance

Development of a NZ programme

- Breeding began in 1992 because of tightening plant importation regulations
- Base material primarily from SCRI and East Malling (gall mite resistant)
- 2002 joint programme between Plant &Food Research (PFR) and Blackcurrants NZ (BCNZ)
- Programme managed by BlackHort committee, PFR and BCNZ

NZ Programme Breeding Cycle

- 1000 seedlings planted every year
- 20-30 seedlings selected for advanced selection plots in Nelson and Canterbury
- 1 selection released every year to growers is target

- Compared with other programmes, less testing is done on the cultivars before release.

- NZ growers are part of the testing and development process with a new release.

Objectives of the NZ Programme

On-Farm objectives

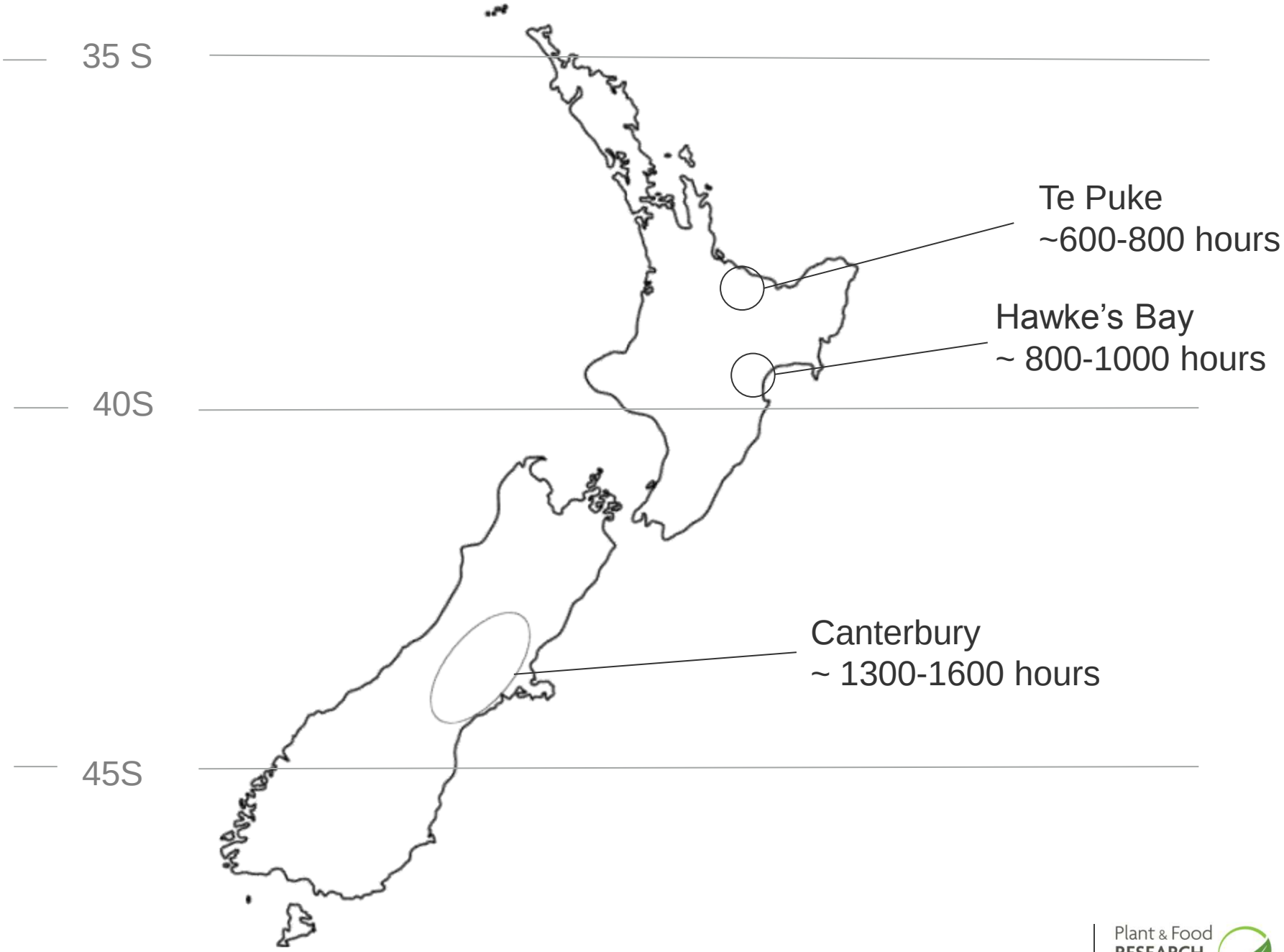
- Consistently high fruit yields
  - >10 tonnes/ha
- Growth habit suitable for machine harvesting
- Seasonal spread - late December-early February
- Pest and disease resistance/tolerance
  - Gall mite, currant clearwing, Leaf spot
- Low chill character

Currant Clearwing

- Major pest in New Zealand
- Presently controlled by pheromone mating disruption; however, problems when populations are high
- Breeding for resistance a long-term objective
- Tried to import resistant germplasm, but unsuccessful so far

Selecting for low chill

- Challenge to find a rapid, robust screening test for low chill, as chill is a complicated process
- Collaborating with James Hutton Institute on low chill on project to develop genetic marker for low chill. A cross ‘Ben Dorain’ x ‘Sefton’ planted in both the UK and NZ
- Budstick and budbreak assessments
- Testing near releases at low chill sites


35 S
40S
45S
Te Puke
~600-800 hours
Hawke's Bay
~ 800-1000 hours
Canterbury
~ 1300-1600 hours

End-use objectives

- High quality juice market, 7%+ blackcurrant juice
  - High colour, ºBrix, vitamin C, flavour
- Commodity juice market
  - High juice yields, high production
- Other market products e.g. IQF, powder bakery products

Health

- Past emphasis on increasing total anthocyanin levels in selections.
- Research is being carried out in PFR, lead by Dr Roger Hurst on specific anthocyanins and health benefits.
- In the future the breeding programme aims to be breeding for specific anthocyanin combinations targeting specific end use products.

Cultivars from the NZ Programme

Commercial cultivars

‘Murchison’- gall mite resistant, high yielding

‘Blackadder’ – high quality juice market cultivar

‘Melina’ – gall mite resistant

Newer cultivar releases

‘Isobel’ - Gall mite resistant, possible quality juice market contender

‘Kepler’ – New quality juice market contender released to growers last winter.

5 selections are nearing release - 4 gall mite resistant

Summary

- Small targeted programme
- Future emphasis on low chill selection and currant clearwing (CC) resistance
  - Importation of further CC-resistant material
  - Continued collaboration with James Hutton Institute on low chill project and exchange of material
- Development of cultivars that have particular health benefits

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