



A high yielding forage oat for sub-tropical Australia

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Overview

- Forage oat in Australia
- Introduction to breeding program
- Aladdin
 - Characteristics
 - Leaf rust resistance
 - Forage yield
- Other research

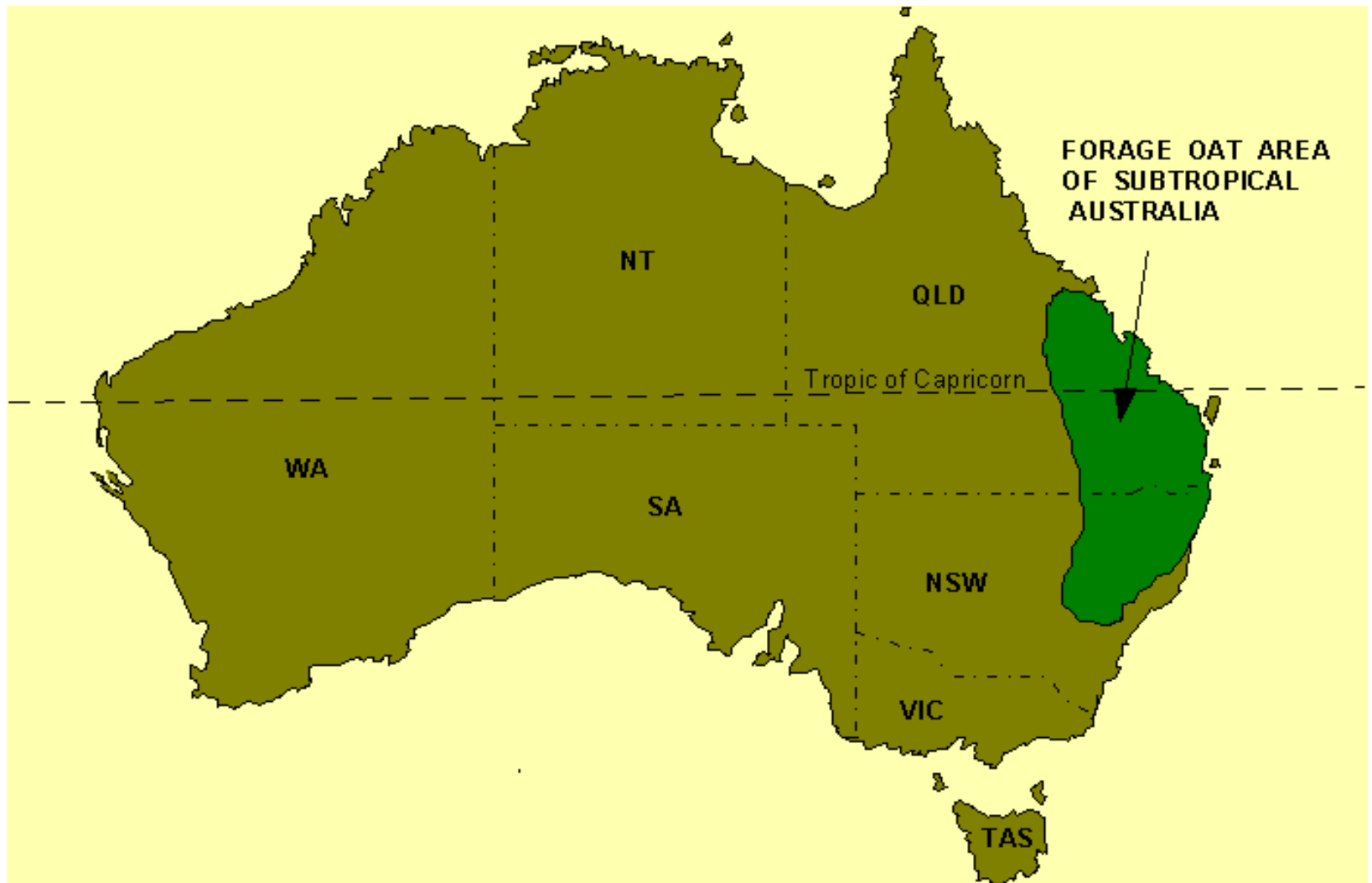


Forage oat in Australia

- Main winter forage crop
- Reliable high quality animal feed
- Long production season (March to November)
- Beef, dairy and sheep industries
- Native & improved pastures dormant in cooler months
- 500,000 ha grown annually in Queensland and NSW



Forage oat in Australia



Forage oat in Australia



Breeding Objectives

- Durable resistance to crown rust (*Puccinia coronata*)
- High forage production and quick recovery from grazing
- Late maturity & wide adaptation
- Better seedling establishment under high temperatures at planting



High forage yield



Late maturity



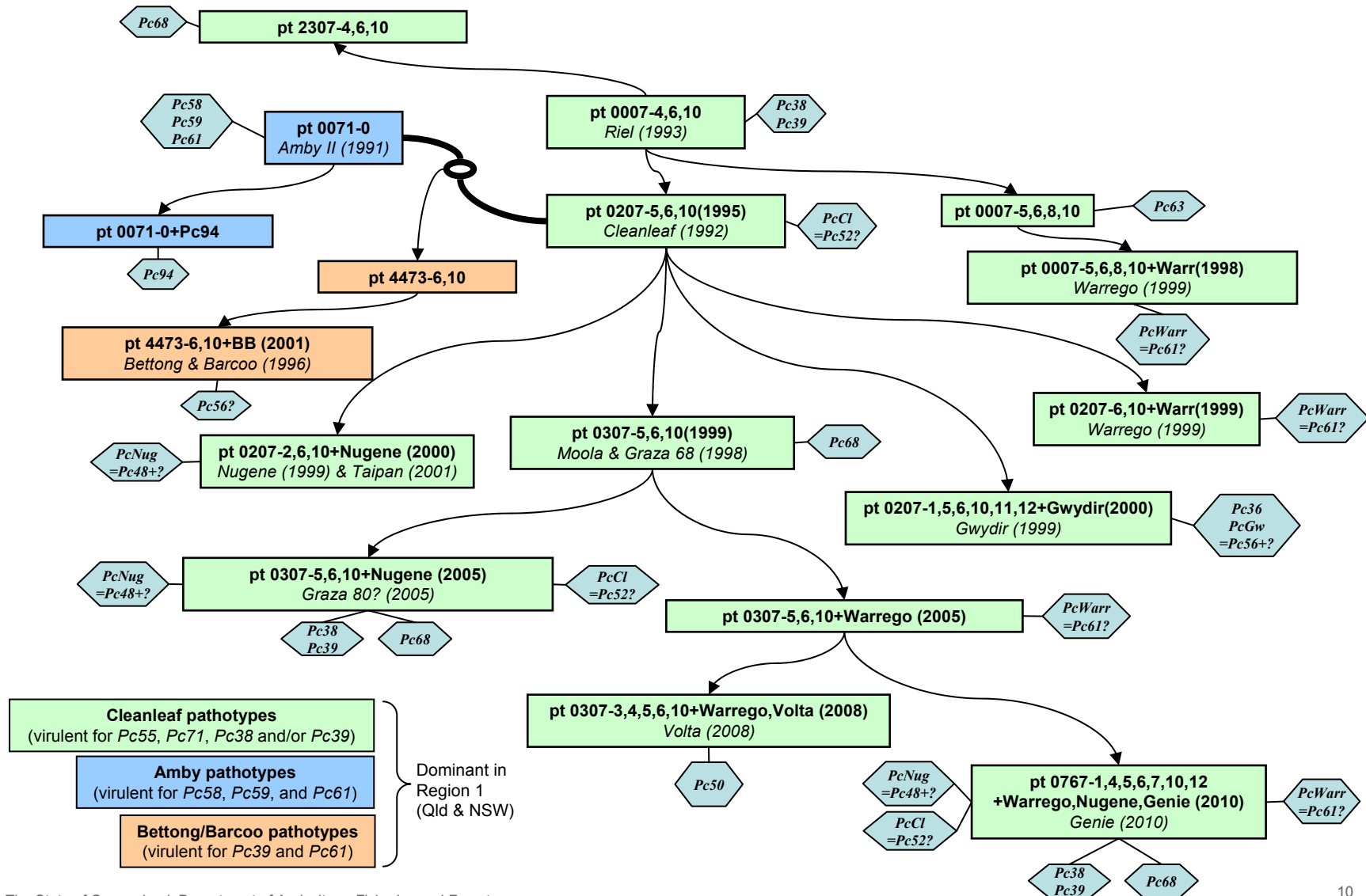
Crown rust

- Difficult disease environment
 - Commercial fields dominated by susceptible varieties
 - Diversity of pathotypes
 - ‘Green bridge’
 - Ubiquitous wild oats
- Lack of new sources of major gene resistance
- Partial resistance useful?



Crown rust

Crown rust pathotypes



Crown rust screening



Crown rust screening



Forage cutting trials



Forage cutting trials



Aladdin

- Complete resistance to crown rust (two major gene resistance Pc91 and Pc50) → suitable for coastal and higher rainfall areas
- Very high forage yield (similar Genie)
- Late maturity → long grazing window (Apr – Nov)
- Excellent regrowth with low growing point → tolerance to heavy grazing, good recovery



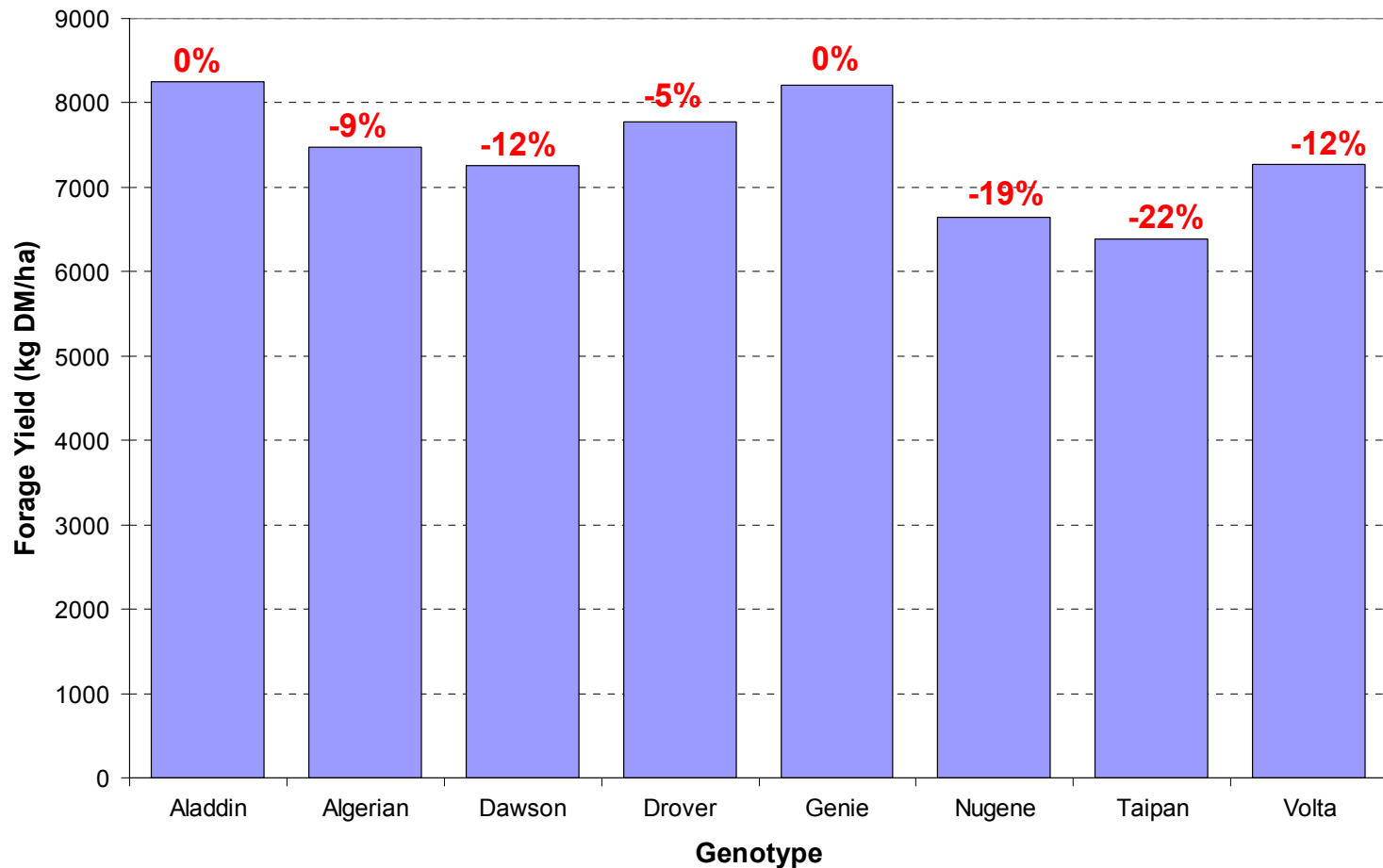
Variety comparison



Forage yield



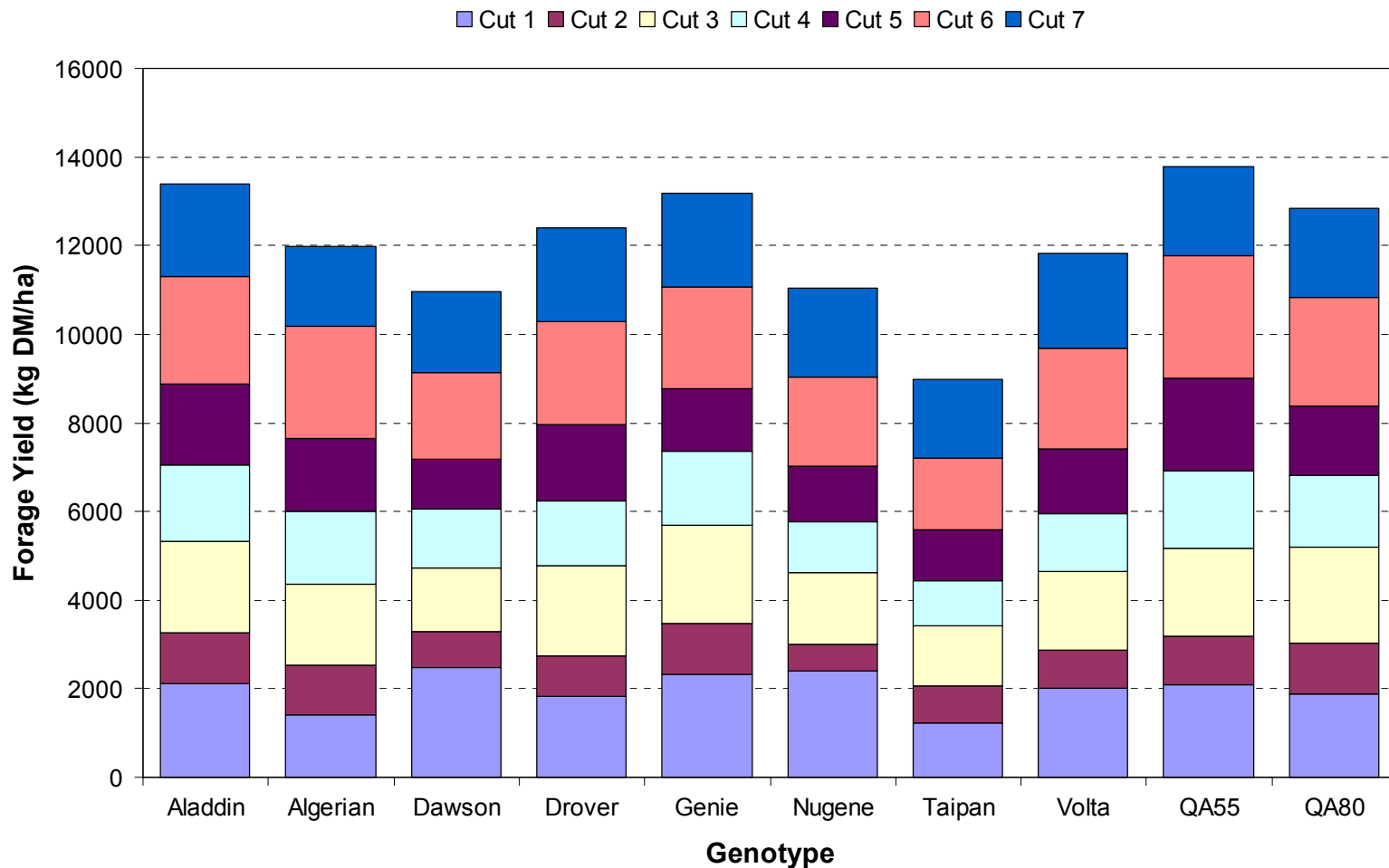
Figure 1: Total forage yield (kg dry matter per ha) of eight forage oat cultivars over four years (2008-2011) at three sites in southern Queensland, Australia.



Forage yield



Figure 2: Cumulative forage yield (kg dry matter per ha) of ten forage oat cultivars in 2011 at Gatton in southern Queensland, Australia.



Other research

- Assessment of fungicides for crown rust control in forage oat in Australia → Developing recommendations on circumstances where fungicide application likely or unlikely to be economically beneficial
- Developed lab-based method for measuring response of current varieties to high temperature at planting → Routine screening of advanced experimental lines
- Use of 'Greenseeker' device to measure NDVI (Red/NIR reflectance) → Emergence and early vigour of breeding lines in cutting trials
- Forage quality analysis using NIR calibrated with wet chem

Forage oat breeding

