

# Successful interactive plant breeding between small companies in northern and southern hemispheres

Plant Research (NZ) LTD.

CatesGRAIN&SEED  
The name that keeps cropping up

## Plant Research (NZ) Limited

Plant Research (NZ) Limited (PRL), a privately owned plant breeding company based in New Zealand began trading in 2000. Our principal shareholder is Cates Grain & Seed Ltd, a respected grain and seed production company based in Ashburton, New Zealand. With this linkage PRL have access to a significant share of the New Zealand arable industry and a shareholder with an extensive history in large scale quality seed multiplication activities.

## Adrian C. Russell

Managing Director Plant Research (NZ) Limited  
Lincoln Green, Lincoln University, Canterbury New Zealand  
www.plantresearch.co.nz  
email: info@plantresearch.co.nz  
ph: +64 21 887887

## Global linkages and networks

Due to the size of the New Zealand markets for arable crops, PRL focus on a network approach to marketing our genetics globally.

In the USA market where our green seeded peas dominate the market (80% share) we work with a similar sized company Progene Plant Research LLC. Through shuttle breeding between hemispheres and open access to each others germplasm we can exploit environments where biotic and abiotic constraints are similar and use the strengths of each company to multiply the impact of what is achieved beyond what could be achieved working independently. Royalty earned from our jointly developed genetics is shared according to an agreed and flexible formula based on individual company contributions to the genetics development and marketing. Through the use of both hemispheres and Marker Assisted Selection systems we are developing targeted varieties with enhanced quality and yield quickly. Without this interactive breeding approach both PRL and Progene would not have achieved such a significant market share as they have by working together.

Using molecular marker technology we are screening for resistance to diseases that pose a quarantine risk for the movement of seed between hemispheres. We can screen for resistance without the need to expose the genetics to the pathogen we target. Our current suite of crops includes field peas, triticale, wheat, oats and cover crops.



USA field pea nursery plots at Moscow ID 2013



Harvesting oat trials in Southland New Zealand 2014



Wheat trial: Methven New Zealand 2013/14



Inspecting PRL pea fields in South Africa

## Seed and Mechanization Charitable Development Trust (SEMEC)

Activities are enhanced through collaboration with Lincoln University Seed Research Centre – SEMEC (Seed and Mechanization Charitable Development Trust) to source quality research equipment and to further enhance and facilitate international linkages and networking. We use a FLEXISEEDER built drill to plant all of our New Zealand research plot trials on farmer prepared land.



Drilling oat trials in Southland New Zealand using a FLEXISEEDER built plot drill.

## Philanthropic activities

Through our global networking approach PRL and Progene have commenced sustainable philanthropic activities in countries where there is need and in which we are marketing our genetics to invest in education and health initiatives. The amount of assistance we can give is directly linked to the commercial success of our genetics within that community. We are extending this activity as we commercialize new genetics in countries where aid has an impact. The first activity in this initiative is in South Africa and we will be extending this to Kenya and Tanzania as our genetics are commercialized.

## Resources and Environment

Plant Research (NZ) Limited has a complete range Wintersteiger planting and harvest equipment for small precision row, plot and larger multiplication activities. We have three Wintersteiger Elite combines, a precision planter and FLEXISEEDER built plot drill. We have seed drying, seed cleaning and bagging facilities. All of our staff are science graduates.

The New Zealand environment has many global analogues and is reliable, providing excellent quality and yields for these activities. Irrigated or dry land sites are available ranging from cool long season to short season heat and moisture stressed environments. The most ideal window for northern hemisphere collaborations is spring sown crops that are planted from September through October with harvest occurring from late January through February depending on the species. Autumn/winter planted crops are normally planted from March through to August creating a potential sowing window for arable crops from March to October.

Besides conventional cultivation, New Zealand is moving towards reduced and zero tillage options. Work can be done in flat and rolling hill topography. Hill and high country and coastal flat land options are available that include a range of soil types.

## Opportunities

Opportunities exist to extend our collaborative linkages with Nordic companies particularly in cereal breeding (wheat and oats). Collaborative seed production, row nursery and disease screening activities in New Zealand in spring cereals can provide northern hemisphere companies an opportunity to gain an additional season. New Zealand is in the Southern Hemisphere, lying between 34° and 46° S providing opportunities to select for daylength sensitivity and variety earliness.

