Making Peanuts Work in Northern Australia

John Howard
Overview of PCA and Australian Peanut Industry

PCA Katherine NT Peanut Project 2002-2009
  - Diversification of Peanut Production Base

Research and Development
  - Optimal Cropping Systems and Rotations

Summary
Overview

- Established in 1924, PCA is Australia’s leading processor and supplier of Hi Oleic peanuts
- Located in key Australian peanut growing regions with operating facilities at Kingaroy and Tolga in Queensland
- PCA’s assets include a valuable gene pool and cultivar breeding program, and water licences in the Bundaberg region
- Focused strategy on value adding peanut products and marketing into high value niche markets

<table>
<thead>
<tr>
<th>Snapshot of PCA</th>
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<tbody>
<tr>
<td><strong>Primary services</strong></td>
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<tr>
<td><strong>Average peanut tonnages</strong></td>
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<td><strong>Facilities</strong></td>
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<tr>
<td><strong>Number of FTE &amp; casuals</strong></td>
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<td><strong>Corporate structure</strong></td>
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Leading Australian supplier and processor of Hi Oleic peanuts........

• Hi Oleic peanuts have an oleic acid ratio that more closely resembles that of olive oil. This naturally bred characteristic makes Hi Oleic peanuts a healthier option, increases shelf life and commands a premium to mid-oleic varieties of peanuts

• PCA’s processing throughput averages 25,000 tonnes of peanuts per annum, or approximately 60% - 70% of average Australian peanut production (dependant on dryland production)

PCA supplies the following peanut products:

• Peanuts in-shell
• Peanut kernels (raw, blanched, splits, gourmet)
• Granulated
• Peanut paste
• Roast peanut fines
• Peanut oil
Operating in key areas of the value chain

<table>
<thead>
<tr>
<th>SEED</th>
<th>GROWING</th>
<th>INTAKE</th>
<th>PROCESSING</th>
<th>SELLING</th>
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<tbody>
<tr>
<td>Selecting Characteristics</td>
<td>Preparing Soil</td>
<td>Weighing</td>
<td>Blanching</td>
<td>Flavouring</td>
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<tr>
<td>Cross Breeding</td>
<td>Planting of Seed</td>
<td>Drying</td>
<td>Roasting</td>
<td>Packaging</td>
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<tr>
<td>Testing - Glass house</td>
<td>Fertilizing</td>
<td>Sample Grading</td>
<td>Separation of Splits</td>
<td>Marketing</td>
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<tr>
<td>Field Testing</td>
<td>Spraying for weeds</td>
<td>Aflatoxin Testing</td>
<td>Xray Sorting</td>
<td>Warehousing</td>
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<tr>
<td>Propagation of Seed</td>
<td>Spraying for insects</td>
<td>Cleaning</td>
<td>Colour Sorting</td>
<td>Distribution</td>
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<tr>
<td>Release of Commercial Qty</td>
<td>Spraying for diseases</td>
<td>Foreign Material removal</td>
<td>Salting</td>
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<td>Turning the bushes</td>
<td>Storing</td>
<td>Flavouring</td>
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<tr>
<td></td>
<td>Threshing the peanuts</td>
<td>Shelling</td>
<td>Packaging</td>
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<tr>
<td></td>
<td>Cleaning</td>
<td>Grading by size</td>
<td>Transporation</td>
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<td></td>
<td>Drying</td>
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PCA
Farmer
PCA Katherine NT
Peanut Project
2002-2009
Regional Change in Peanut Production

- Peanut farming commenced in Burnett and N. Qld in early 1900’s
- Mainly based on rainfed production, with large variability in production
- This created significant difficulties with marketing product domestically and overseas
Reasons for Change in Production Base?

**Climate Variability/Change**

Burnett Region SEQ – Getting drier?
Reasons for Change in Production Base?

Climate Variability/Change

Katherine Region NT

Getting wetter!

Decade Anomaly (v 1900-1949)

- Katherine Reg 1065
- 13.5% CoV for 2010
- 15.9% CoV for 2020
NT Development

Florina Road – 500ha Pilot Farm (Purchased 2002)
NT Development

Taylors Park - 12,000ha Farm  (Purchased 2007)

Produced (in a year) up to:
- 4,000mt Peanuts
- 2,500mt Corn
- 12,000mt Fodder
NT Peanut Farming System R&D

NT Govt, Qld DAFF and PCA have successfully conducted a number of peanut and maize variety trials over period 2000 - 2014, identifying adapted varieties for NT conditions.
Sustainable Peanut rotations have been demonstrated in the NT

- A 1:3 rotation with 2 grass crops (maize – forage-wheat - rice) is required for the sustainable production of peanuts.
- High value cereal options possible (waxy / gritting maize).
- Works very well with sugar cane.
Sustainable Rotations

Maximum peanut yields are achieved under well rotated land (min 1 peanut : 3 crops)
Peanut Crop Simulation Models

DAFFQ/PCA have developed models to test various cropping system scenarios for Northern Australian conditions.

Example: Peanut-maize production simulations for Katherine (14.8°S, 132.3°E): Water optimization in peanut - maize rotations
Simulated peanut and maize yield and irrigation requirements on a Tippera soil in Katherine

- Simulations suggest corn grain yield potential may be significantly higher in dry v’s wet season.
- Crop model simulations allow the testing of optimum agronomic combinations for peanut production + nutrient and irrigation implications in N. Aust.

**Grain yield of peanut and maize**

<table>
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<tr>
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<th>Wet season maize-dryseason peanut</th>
<th>Wet season peanut-dry season maize</th>
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<tr>
<td>Yield (t/ha)</td>
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<tr>
<td>Maize</td>
<td>6</td>
<td>8</td>
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<tr>
<td>Peanut</td>
<td>4</td>
<td>6</td>
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**Irrigation requirements**

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<td>Irrigation (ML/ha)</td>
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<td></td>
<td>12</td>
<td>10</td>
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Optimum for Peanuts

- Dry season preferable.
- Plant late March but spread out to allow broader harvest window.
- Planting into a mulch crop works well.
- Monitor crop water use carefully to optimise irrigation.
- Close monitoring of insects and leaf disease important.
- Experienced operators preferred at digging & harvesting.
Summary

- Peanuts have been shown to grow well in NT/N Aust, and are an effective legume in rotation with a range of cereal / fodder / cane crops.

- Peanuts grown under centre pivot irrigation during winter can produce sustainable pod yields of > 4.5t/ha.

- Growing peanuts is not the stand alone operation, it needs to be a part of a broader cropping system.

- Peanut provides a cash crop + quality peanut hay.

- High value cereal (e.g. waxy/gritting corns, rice) options assist cereal rotation profitability.

- Fodder crops (sorghum/millet) provide long rotational benefits for peanuts and have ready markets into the cattle industry.