

## CANFA ANNUAL NO-TILL TOUR – REPORT ON WA/NT TRIP

By Neville Gould, CEO CANFA

As is our tradition now, 41 CANFA members set off by coach on an epic 5600km journey from Perth to Darwin on our annual no-till tour. The tour started on August 12 and ended on August 26, 2009.



Figure 1: No-till tour group at HMAS Sydney memorial, Geraldton WA

Williams (Chair, CANFA) was responsible for much of the organisation and our thanks go to them for a wonderful and well organised trip.

The trip was interspersed with tremendous opportunities to explore the beauty of the west coast, Pilbara, Kimberley, Kakadu and Top End regions. This report will however concentrate only on the agricultural pursuits along the way.

### Perth to Geraldton (August 12, 2009)

We travelled via the “middle road” from Perth to Geraldton with this area and that between Geraldton and Carnarvon enjoying an excellent season; if anything areas were too wet and were suffering from some water logging.



Figure 2: WA wheat field in August 2009



Figure 3: John Deere museum at Carnamah WA

Typical of this northern grain belt, cereals were intermittently rotated by canola and lupins with the mandatory salt lakes and patches putting an occasional appearance as well. An early break in our travels was made in the grain town of Carnamah where we visited a large private John Deere tractor museum, own by Hal Walton.

## **Carnarvon – Western Australia (August 13, 2009)**

Carnarvon is located on the WA coast and on the Gascoyne River. For many of the Coonamble farmers, this river (and the later visited Fitzroy River) was much like their Castlereagh River, with the water running through a bed of sand from which the irrigation water is extracted. One prominent feature of this area, which we did not experience, is the constant prevailing westerly winds, which dictates much of the way in which the local agricultural industries operate.

The Carnarvon plantation area (161 plantations) includes about 1020ha of cropped horticultural land. Vegetables are grown on about 570ha, 350ha are planted to bananas, and 100ha to tree fruits. The industry is valued at \$51.3m. The diversity of the produce grown in the area is considerable, some being tropical fruits, paw paw, mangoes, citrus, stone, avocados, grapes and vegetable crops such as tomatoes, beans, capsicums and asparagus. 115,800 square kilometres of the Gascoyne is taken up by pastoral stations. The production of meat and wool are the primary activities however many stations are diversifying in goat domestication, horticulture (grapes) inland aquaculture and outback tourism.

We were able to make two visits in Carnarvon, The Gascoyne Research Centre and a local banana plantation.



Figure 4: Indoor research area – Gascoyne Research Centre



Figure 5: Banana plantation at Carnarvon WA

The Gascoyne Research Centre, run by the WA Department of Agriculture and Fisheries was undertaking a considerable amount of work, much under contract for other agencies or private companies. We were given a guided tour of their indoor research area where we inspected wheat planted for stripe rust research, banana growth under cover, citrus and other horticultural fruit crops.

A feature of the banana plantation was the use of the newly developed “PatchSpy” technology. This is a barcode based system that helps banana growers collect the information they need to make decisions that will optimise their business. A barcode tag is attached to each tree within the patch and the position is gps recorded. A handheld device is then used to record events within the life of the tree and its bunch. The system allows for the tree’s parent and the bunch’s weight to be recorded.

Upon departing Carnarvon, we took in an inland detour to Mt Tom Price to look at the huge iron ore facility there, before heading north to Port Hedland and then onto Broome.

### **Shamrock Gardens – Broome (August 17, 2009)**

150 km south of Broome on the edge of the Great Sandy Desert, we were very surprised to find Shamrock Gardens. We were hosted by Manager Philip Anderson. Annexed from a larger pastoral lease, Shamrock Gardens was established to look at the possibility of the establishment of alternative farming systems, including Bt cotton. It was now being used for the production of melons and pumpkins with the labour force being principally backpackers (as it is elsewhere in the Kimberley).



Figure 6: Melons at Shamrock Gardens near Broome



Figure 7: pearl millet being used as a cover crop prior to the planting of melons.

### **Kununurra – Western Australia (August 19-22, 2009)**

Kununurra is the youngest town in WA and was established at the time of development of the Ord Irrigation Area. The Diversion Dam was built in 1963 and was used to divert water from the Ord River to the irrigation area (stage 1). Lake Argyle, which feeds the Diversion Dam was opened in 1972 and has been recently enlarged to hold over 35 times the volume of Sydney Harbour. The development of Stages 2 and 3 has been debated for nearly 3 decades and it appears as though Stage 2 will begin in 2010.

Currently Stage 1 produces over \$50M of agricultural produce with a never ending range of products. Whilst initially developed to grow cotton and rice, its failure has subsequently led to the use of sugar, which has also recently failed. The crop which is now being hailed is sandalwood. This crop has a 12-15 year maturity period until it can be harvested for its wood and its nut. These can be used its fragrant oil and possibly for the biodiesel and food markets.





Figure 8: Lake Argyle



Figure 9: Lake Argyle dam wall and hydro-electric power station

Sandalwood is a parasitic plant and relies on 3 different host plants during its growth. – sesbania or some other acacia being the major host.

The Ord has many other agricultural pursuits open to it – fruit trees (mangoes and bananas were very popular but are making way for the sandalwood now), melons, runner beans, chickpeas, sunflowers, sorghum and chia to name but a few. Boab root has become a speciality/novelty market recently.

Another large pursuit is the seed industry with Pacific Seeds having a well established facility in the OIA for a number of decades. Other growers are contracted by southern companies to produce crops. One of the more prominent and well known of those is Desert Seeds, run by an extravagant ex-Californian Spike Desert and his family, who came to the Ord in the early 1970's. They have more recently established a rum distillery, the oldest in WA. With the failure of the sugar cane industry and the closing down of the CSR mill, Spike is now growing his own small area of cane and erecting his own mill to produce the molasses required to make the rum. The distillery is also now a well-used tourist destination and we had the opportunity to both eat and drink at this venue.



Figure 10: Cotton on OIA - Stage 1



Figure 11: 8 year old sandalwood plantation – OIA

We were also fortunate enough to visit the Frank Wise Institute Of Tropical Agriculture, hosted by Gae Plunkett the Farm Manager. Originally established by CSIRO in the 1940's and now operated by the WA Department of Agriculture and Fisheries, this facility has been responsible for the research of many of the crops that have been established in the OIA since its beginning.

A major issue for discussion now is the development of Stage 2 and 3. It would appear that the NT Government are less likely to assist in its development despite the fact that most of the area under these stages is located in the NT. The political situation suggest that the NT Government will more likely invest in the Katherine region rather than the OIA, which may mean that the original plans for the OIA may change. The other mechanism to affect this outcome is the development of drip irrigation system which has now opened up the possibility of different areas with variable soils and slopes to agricultural production.



Figure 12: Pacific Seeds seed sorghum crop - OIA Kununurra



Figure 13: Frank Wise Institute of Tropical Agriculture

### **Katherine - Northern Territory (22-23 August, 2009)**

Katherine is the third largest township in the Northern Territory with a population of nearly 10,000. The Pastoral industry, mining, defence (RAAF Tindal) and tourism all play a major part in the economy of Katherine. In 2003-04, the estimated total value of agriculture production from the Katherine region was \$75M; \$52M from cattle, \$16.5M from fruit and vegetables and \$7M from hay and other field crops. Production from mining in the region was estimated at \$201M in 2003-04, or 13% of NT mining and energy production. Major commodities included lead, zinc, barites, limestone and gravel. The 1998 flood devastated the



Figure 14: Springvale Homestead, Katherine

town, and the area was declared a national disaster. The flood resulted from the 300-400 mm of rainwater brought by Cyclone Les that caused the already full Katherine River to rise an additional 21.3 metres. The floodwaters inundated the town and much of the surrounding region, requiring the evacuation of many residents. The April 2006 floods placed parts of the town under water (including about 50 houses), caused millions of dollars of damage, and resulted in the declaration of a state of emergency on 7 April.

Springvale Homestead Katherine was established as a sheep station in June 1879 following an epic journey from South Australia. The homestead stands as testament of the ambition, resourcefulness and commitment required to underwrite activities in the north but also represents the despair and disappointment suffered by many of the early pioneers and many of those that followed eg Tipperary Land Corporation (1967-73).

### ***NT DRDPIFR Katherine Research Station***

The NT Department of Regional Development, Primary Industry, Fisheries and Resources took over the CSIRO Katherine Research Station in 1994. I started my career as an Agricultural Engineer here in December 1981 investigating no-till planting technology.

We were hosted by Senior Agronomist Malcolm Bennett and Farm Manager Jack Wheeler. Malcolm discussed his 3 major research projects:

#### 1. Demonstrate and evaluate mulch management techniques in a legume – cereal(s) rotation

Peanut Company of Australia is expanding production of peanuts in the Katherine region. A major problem of growing continuous crops of peanuts (legume) is the build-up of diseases, legume weeds and insect pests. The best strategy available to ameliorate these problems is crop rotation. Maize (cereal) is one crop that grows well in rotation with peanuts especially as an irrigated dry season crop.

Maize is normally harvested the third or fourth week of September, while peanuts are sown in the first week of December. During this intervening period the soil is exposed to wind erosion and the occasional intense storm – severe water erosion. To minimize erosion and to assist in amelioration of weed and diseases issues an irrigated millet cover crop is grown. Prior to sowing the next crop the millet is sprayed with a herbicide to terminate its growth and then is either incorporated into the soil, slashed or left standing.

This experiment evaluates the effect of three millet mulch management techniques on growth and yield of dry season maize.

#### 2. Evaluation of maize cultivars in the 2008 dry season

In addition to the above project, an extensive range of maize cultivars are available for evaluation, these include normal temperate feed and grit lines through to tropical X temperate hybrids as well as waxy and high amylose lines.

This experiment evaluates potential maize cultivars suitable for dry season production in Katherine.

#### 3. Potential perennial bio-fuel crops for the NT

Biofuel research commenced in May 2006 at Katherine Research Station (KRS) with the aim to investigate potential biofuel crops for the NT. Feed stocks (crops) included annuals and perennials and management systems were both irrigated and rainfed.

Annual crops investigated included maize, sorghum and cassava for ethanol production and oil seed crops, including soybeans, sunflower and safflower for biodiesel production.

Perennial crops include cassava for ethanol and Pongamia, Moringa, African Oil Palm and Coconut for biodiesel.

In 2007, the decision was taken not to continue research into any crop that -

1. requires intensive management, irrigation and high fertilizer inputs,
2. whose grain is principally used as stockfeed or for human consumption,
3. competes for prime agricultural land,
4. has weed like characteristics.

Crops short listed for further investigation were the perennial tree crops and cassava.

The tree crops included Pongamia, Moringa and African Oil Palm. The research team was particularly interested in Pongamia as it is a legume (produces its own nitrogen “fertilizer”), adapted to local conditions including low soil fertility and not a noxious weed.

A second biofuel observation site was established at Coastal Plains Research Station in 2007 to compare crop production in a tropical environment (1400 mm rainfall vs. 980 mm rainfall at KRS).

### ***Peanut Company of Australia***

On the north western side of Katherine, we were hosted by Farm Agronomist, Patrick Jones and his Irrigation Manager, John to the two Northern Territory farming properties owned by the Peanut Company of Australia. The first farm, a 500ha property on Florina Road near Katherine, has 200ha under irrigation. This farm produces high quality peanuts which are sold as seed to growers in central, southern and northern Queensland.

In 2006, the Florina Road property won the prestigious NT Power and Water Corporation Environmental Award for its excellent work in ensuring a clean, green and healthy environment.



The second farm, the 11,700ha Taylors Park property west of Katherine, was purchased on August 1, 2007. Taylors Park has 2500ha already cleared with 1100ha approved for additional clearing.

The balance comprises natural vegetation. The soil type is well suited for peanut production both during the wet and dry seasons.

PCA plans to develop the property under centre pivot irrigation (7 bores currently) and grow predominantly peanuts along with some rotational crops such as corn, forage crops, wheat (see below), and (oaten) hay.

The plan is that by 2012 PCA will be producing 13,500 tonnes of peanuts and 25,000 tonnes of corn and other crops from these two Katherine properties. These investments in the Northern Territory will profitably secure a reliable supply of quality Australian peanuts for PCA's markets and ensure that PCA's Kingaroy plant operates at full capacity.



PCA's first NT peanut crop was harvested in 2003. The first crop from the Taylors Park property was harvested in April 2008. PCA will continue to work closely with various Northern Territory government departments in order to establish and maintain a viable and sustainable industry while ensuring the environment remains clean and healthy.



Figure 15: Wheat rotation trial crop at PCA Katherine



Figure 16: open topped peanut silos at PCA Katherine facility

Further development of grain (and horticultural) pursuits in the Katherine region, north in the Douglas Daly region and/or south to Mataranka will depend a number of major factors; the success of enterprises such as Peanut Company of Australia which has necessitated the establishment of an agricultural retail sector to support it, the outcome of current water access plans legislation (one plan recently released in Katherine), land tenure (pastoral lease or freehold and aboriginal land rights). The tyranny of distance, including the cost of transport, will always have a part to play (eg \$150/tonne for fertiliser from Adelaide in containers)

### **Katherine to Darwin – August 23-26, 2009**

Upon leaving Katherine, the tour was able to spend some very enjoyable time in Kakadu National Park (at Coinda and Yellow Water on the South Alligator River) and then in touring around Jabiru (oops!) and Darwin. Despite having travelled a vast distance for many, with some showing the signs of wear at the finish (especially after the “red-eye” flight back to Sydney), all were agreed that this was a fascinating part of Australia and all totally enjoyed the trip. The Top End is best seen at the end of the “wet” when everything is wet and green and it would appear that many would be attempting to get back to investigate it soon.



Figure 17: All good things come to an end too quickly - just like a Darwin harbour sunset

I feel it appropriate to finish in the words of the guide in our Nitmiluk National Park (Katherine Gorge) tour -Boo Boo.