



# Raising pulses in the CIA

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## IN A NUTSHELL

- ▶ A pulse demonstration trial at Coleambally showed chickpeas yielded 1.7–2.7 t/ha, and budgeting on desi chickpeas at \$330/t on farm, they grossed \$560–890/ha
- ▶ The yield of the faba beans was limited by late watering-up, but the seed crop that was also watered up late, had two spring waterings and two fungicide sprays, yielded 4.34 t/ha, and proved very profitable
- ▶ The field peas averaged 2.5 t/ha, grossing \$500/ha – the impact of disease very evident but other pea crops in the Coleambally district yielded from 3.0–3.5 t/ha

***New crops and new layouts are clear signs that diversification is behind the continued growth of Ian and Sharon Sutherland's farming business. Like many traditional rice farmers, they have ceased running livestock (with the exception of agistment at times) and now concentrate on a more intensive cropping program.***

Farming 660 ha of irrigation land at Coleambally, Ian and Sharon started farming rice, wheat, oats, and pastures on traditional rice layouts. Their business has expanded to include canola, faba beans, sorghum, azuki beans and most recently field peas. To achieve the best irrigation results, some of the newer crops are grown on raised bed layouts.

The venture into field peas in 2005 came about from Ian's previous long-time experience as a seed wheat grower. The field peas he grew, a relatively new erect variety named Kaspera, were a seed crop for AWB Seeds.

Kaspera had already shown a yield potential as high as 5 t/ha on irrigation, and Ian felt field peas' adaptation to a wide range of soil types and soil pH, such as occurs in the Coleambally district and on his farms, made Kaspera a promising crop in their business.

The raised beds established for the field peas, offered an ideal opportunity to conduct a small demonstration trial of other pulses using Ian's own machinery. Ian trialled three new varieties of chickpeas, one new variety of faba beans and another erect variety of field peas to see how they compare to the other winter crops he now grows.

## The plan

The trial area consisted of three beds of each variety (totalling 1/3 ha each), and for ease of management, each treatment had a similar sowing, spraying and harvesting program.

## Chickpeas

The trial consisted of two new varieties of desi chickpeas,

Flipper and Yorker, just commercially released by the NSW Department of Primary Industries at Tamworth. Suited to the northern and central regions of NSW, both varieties had better disease resistance to ascochyta blight than current varieties, with Flipper the higher resistance rating and Yorker with better resistance to phytophthora root rot. The third chickpea variety was a numbered line – F95425 from the Victorian DPI Breeding program at Horsham – that is close to commercial release. It is a small kabuli type with excellent resistance to ascochyta blight and resistance to phytophthora.

## Faba beans

Ian included a new variety of faba beans in the trial, which was later launched as Nura. It will suit irrigation areas where lodging has been a big issue, being shorter in height and with improved stem strength. Nura has improved disease resistance to chocolate spot and rust compared with current varieties enabling a reduction in fungicide applications.

## Field peas

The field peas variety in the trial was an erect field pea similar to Kaspera called Yarrum. It has good powdery mildew resistance making it well suited to northern NSW where powdery mildew is common. Yarrum has been trialled in southern NSW and while its average yields are less than Kaspera, the powdery mildew resistance may be beneficial under irrigation. The Yarrum crop was not harvested separately to Ian's Kaspera crop, so we were unable to evaluate yields.

## Field and crop management

Ian started by burning his wheat stubble in the 23.5 ha field he planned to use (for the seed crop and the trial) on 8 February and drilled 150 kg/ha of Superfos (supplying approximately 24 kg P/ha and 9 kg S/ha) into the existing beds using narrow points on his Shearer Seeder on 12 February. He then reshaped the beds on the 23 February.

The beds were pre watered on 19 April and later sprayed



with Roundup Powermax™ (active ingredient glyphosate) at 1.3 L/ha on 13 May, to control germinating weeds.

With no rainfall to date, sowing commenced on the trial plots on 23 May with the main sowing of Kaspera on the remaining 21.4 ha the following day. All varieties were sown at 100 kg/ha of seed except for the Nura faba beans that were sown at 138 kg/ha. Ian sowed six rows on the 64 inch beds at 20 cm row spacing using a Great Plains Seeder and a further 60 kg/ha of Superfos (approximately 10 kg P/ha and 4 kg S/ha) was drilled with the seed. Spinnaker® (active ingredient imazethapyr) to control wireweed and other broadleaf weeds was applied at 65 mL/ha to the beds on 31 May and activated by the season's breaking rain on 10 June.

All the pulses established well during June with 71 mm of rain, and a further 65 mm in July with frequent showers. To everyone's surprise there was no sign of disease in the chickpeas where no fungicides having been applied. This showed the good levels of disease resistance of these new lines. The Nura faba beans having only one Dithane spray on 11 July were also looking good.

The field peas however were a different story as Ian found out after returning home from holidays on 8 August. Dead patches were appearing in the crop and beginning to spread. The disease was quickly identified as bacterial blight and trial sprays with mancozeb and copper fungicides to prevent the disease from spreading were ineffective. The disease appeared to be seed borne and sowing early and into dry soil, combined with the frequent wet, cold and windy conditions were ideal for it to multiply and spread. The disease was more severe on the heavier soils that stayed wetter for longer periods. However it was quick to stop once the weather conditions improved and the smaller patches disappeared as the crop grew away rapidly in the spring.

The amazing thing was that the Flipper, Yorker and F95425 chickpeas, and the Nura faba beans that were the most likely of the varieties to get foliar diseases such as ascochyta blight, and chocolate spot were very clean having only had one preventative fungicide spray of Dithane® (active ingredient mancozeb) spray on 30 August, making them very cost efficient and easy to manage. All the pulses were later sprayed for heliothis caterpillars on the 29 Oct with 300 mL/ha of Ballistic® (active ingredient deltamethrin).

### The test – yields and returns

At harvest of the trial plots on 23 December the Yorker chickpeas yielded 2.7 t/ha, F95425 yielded 2.0 t/ha, and Flipper yielded 1.7 t/ha. If you budget on desi chickpeas at \$330/t on farm, then Ian's grossed \$890 to \$560/ha.

The Kaspera field peas ended up averaging 2.5 t/ha and considerably higher in the areas where the disease had less impact. Other pea crops in the Coleambally district yielded from 3.0 to 3.5 t/ha. At \$200/t on farm Ian grossed \$500/ha.

The other factor that benefited most of the pulses that Ian grew, with possibly the exception of the chickpeas that love it hot, was the mild spring finish with rains in August of 70 mm, September 53 mm and a further 56 mm in October. As a result, Ian decided not to give the crops any spring

irrigations. The Nura faba beans in the trial were harvested together with a larger seed crop of Nura that Ian had watered up late on 20 May. Having two spring waterings and only two fungicide sprays of Dithane, this crop surprised Ian by yielding 4.34 t/ha, and being a very profitable crop.

Both chickpeas and field peas are very good at extracting soil moisture and it is common practice to grow chickpeas in the northern regions on stored subsoil moisture. Chickpeas thrive in hot springs and summers provided their roots can penetrate into the subsoil and access stored moisture. To further support this, a crop of Genesis 90 chickpeas were grown in 2004 at Boort in Victoria with only one pre irrigation and yielded 3 t/ha.

Ian commented that he is now more confident in identifying the soil types on his farm that would best suit chickpeas. The possibility of growing chickpeas after rice that often occurs in India is now a real possibility with beds in bays where the risk of waterlogging can be minimised. The ability of chickpeas to extract unavailable phosphorous needs further investigation in this situation.

This trial, conducted by Ian Sutherland with the support of Kieran O'Keeffe, District agronomist with NSW DPI and John Rohnan senior agronomist for Elders Coleambally, has not only highlighted the excellent disease resistance of the new chickpea and faba bean releases but has also shown that chickpeas and field peas under partial irrigation are a definite possibility for irrigation farming systems in this region in the future. The returns per megalitre from less water required by these crops will be of great interest to all irrigators looking for suitable crop rotation alternatives.

It will be interesting to see the benefits of these pulses to the wheat crop Ian intends to plant in the same field this year. 🌱

### Further information

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**Figure 1** Ian Sutherland in a crop of chickpeas, grown as part of a pulse crop demonstration trial that showed an excellent fit of a range of varieties in the irrigated farming system