16. Herbicide Tolerant Pulses at Keith

Penny Roberts[1] (penny.roberts@sa.gov.au), Sarah Day[1], Richie Mould[1], Christine Walela[1] and Amanda Pearce[2]

[1] *SARDI Agronomy, Clare* [2] *SARDI Agronomy, Struan*

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KEY MESSAGES

- A newly released herbicide tolerant faba bean provides increased weed management options.
- A new release lentil provides another herbicide tolerant lentil variety with different agronomic characteristics.
- However, care still needs to be taken in relation to herbicide use, paddock selection, and herbicide permits and registrations.

Background

In 2018, two new Group B herbicide tolerant pulses were released – the faba bean variety PBA Bendoc and the lentil variety PBA Hallmark XT. Work that has been undertaken to evaluate the herbicide tolerance of these varieties from 2015-2018 in the Mid-North of SA, prior to commercial release, was then extended in 2018 to different agro-ecological zones. A trial site was established at Keith in 2018 to demonstrate the level of tolerance of these new releases in the South East of SA.

The aim of this work was to: 1) identify the level of tolerance of PBA Hallmark XT lentil to sulfonylurea herbicides (SU) applied as simulated low-level residuals from a previous cereal crop and imazethapyr when applied post emergence (4-5 node growth stage); and 2) identify the level of tolerance of PBA Bendoc faba bean to sulfonylurea herbicides (SU) applied as simulated low-level residuals from a previous cereal crop and imazamox + imazapyr when applied post emergence (4-5 node growth stage).

Activities

Treatments

Varieties	Faba bean – PBA Bendoc, Nura and PBA Samira
	Lentil – PBA Hallmark XT, PBA Hurricane XT and PBA Jumbo 2
Plant density	Faba bean 24 plants/m^2
	Lentil 120 plants/m^2
Sowing date	17/05/2018
Fertiliser	150 kg/ha 2:16:0:5 2% Zn
Chemistries applied	Faba bean – chlorosulfuron, metsulfuron-methyl, triasulfuron applied as simulated low-level residuals post sowing pre-emergence. Imazethapyr applied at 4-5 node growth stage.
	Lentil - chlorosulfuron, metsulfuron-methyl, triasulfuron applied as simulated low-level residuals post sowing pre-emergence. Imazamox + Imazapyr applied at 4-5 node growth stage.

PBA Bendoc faba bean was assessed alongside Nura and PBA Samira to determine the level of tolerance of these varieties to select Group B chemistries, applied either post emergence (4-5 node growth stage) or applied as simulated low-level residuals from a previous cereal crop. PBA Bendoc demonstrated a high level of tolerance to imazamox + imazapyr herbicides when applied post emergence (4-5 node growth stage) compared to Nura and PBA Samira (Figure 1). There were also higher levels of tolerance to all Group B chemistries applied as simulated low-level residuals from a previous cereal crop compared to Nura and PBA Samira (Figure 1). While in this trial the yield of PBA Bendoc was higher in the treatments compared to the nil it is important to note in long term trials there has been yield reductions in PBA Bendoc where metsulfuron-methyl, chlorsulfuron, and triasulfuron were applied as simulated low-level residuals from a previous cereal crop.

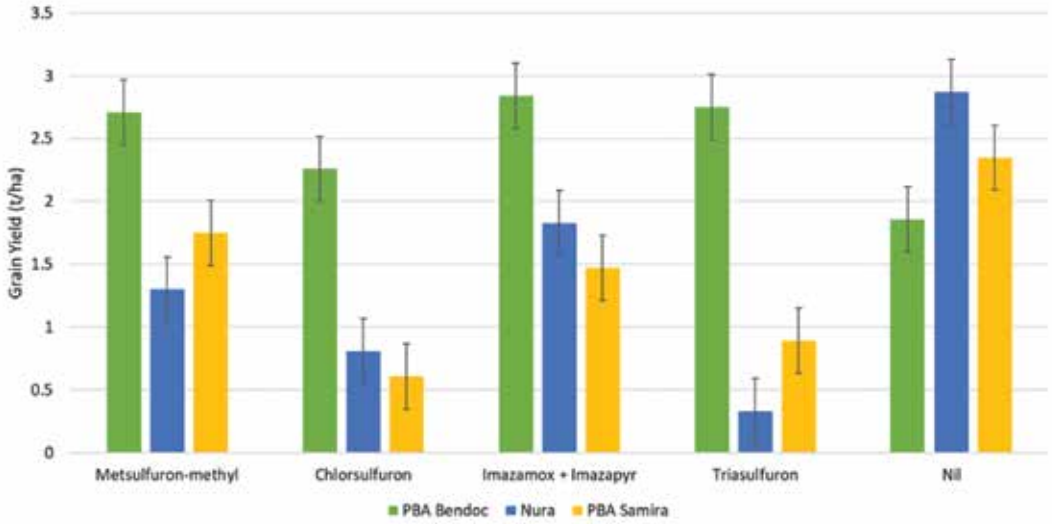

Figure 1. Faba bean grain yield (t/ha) response to the application of imazamox + imazapyr herbicide applied post emergence (4-5 node growth stage) and sulfonylurea herbicides applied as simulated low-level residuals from a previous cereal crop at Keith, 2018. Error bars represent least significant difference (<0.05).

PBA Hallmark XT lentil was compared alongside PBA Hurricane XT and PBA Jumbo 2. PBA Hallmark XT and PBA Hurricane XT had similar levels of response to applied herbicides, and both higher than PBA Jumbo 2. This is consistent with the long-term work that has been undertaken within the Southern Pulse Agronomy project (DAV00150). The work demonstrated both PBA Hurricane and PBA Hallmark have a level of tolerance to imazethapyr when applied post emergence (4-5 node growth stage), and to sulfonylurea herbicides (SU) applied as simulated low-level residuals from a previous cereal crop (Figure 2). However, it is important to note that yield reductions did occur in PBA Hurricane XT comparted to the nil to metsulfuron-methyl, triasulfuron applied as simulated low-level residuals post sowing pre-emergence. This result is also supported by the long-term work undertaken where yield reductions have occurred at other sites when chlorsulfuron, metsulfuron-methyl and triasulfuron were applied as simulated low-level residuals post sowing pre-emergence.

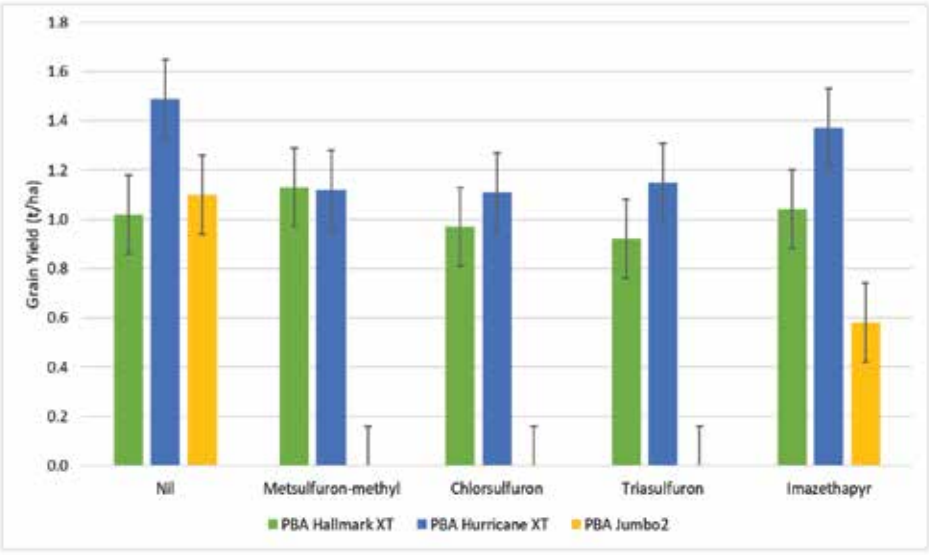

Figure 2. Lentil grain yield (t/ha) response to the application of imazethapyr herbicide applied post emergence (4-5 node growth stage) and sulfonylurea herbicides applied as simulated low-level residuals from a previous cereal crop at Keith, 2018. Error bars represent least significant difference (<0.05).

Note: Herbicides used in these trials are currently unregistered and were used for experimental purposes only. Current permits, product label rates, plant back periods and label directions must be adhered to. There is currently an application before the Australian Pesticides and Veterinary Medicines Authority (APVMA) seeking a permit for imazethapyr use in PBA Hallmark XT lentil and for imazamox and imazapyr use in PBA Bendoc faba bean.

Conclusions

The new faba bean variety provides increased weed management options to growers, while the new lentil release provides growers with a XT lentil with different agronomic characteristics. However, results indicate care still needs to be taken when considering in-crop herbicide applications, and when selecting paddocks and the potential sulfonylurea herbicides usage in the preceding crop(s). For lentil, there is a fitness penalty for growing XT lentil of 5%-10% – this needs to be considered in addition to the potential yield reductions from herbicide applications or residuals.

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