Alternatives to diuron in the Wet Tropics: *Wrap-up of the 2014–2015 trials*

A series of trials in Far North Queensland is assessing the performance of pre-emergent herbicides in trash blanketed ratoons, across a range of environmental conditions. Four trials were carried out in 2014–15 and three trials have been established for 2015–16. Results from the trials in 2014–15 are summarised in this article and tables. ***By Phil Ross, Adoption Officer, Mackay***

As well as comparing the performance of the herbicides, the trials aimed to assess the consistency of effectiveness over the range of environmental conditions. The herbicides tested were:

Treatment	Active(s)	Product rate kg or L/ha
Barrage – full rate	diuron 468 g/L and hexazinone 132 g/L	4
Barrage – low rate	diuron 468 g/L and hexazinone 132 g/L	0.9
Flame®	imazapic 240 g/L	0.4
Balance®	isoxaflutole 750 g/kg	0.2
Clincher Plus	metolachlor 960 g/L	2.7
AmiTron®	amicarbazone 700 g/L	1.4
Water rate 300 L/ha for all herbicides. Shirquat (paraquat 250 g/L) at 1.2 L/ha added to Barrage full rate, Flame® and Balance®.		
AmiTron® is as yet not released for use in Australia. Arysta LifeScience is planning for APVMA registration in 2016.		

Key Messages

SRA Weed Agronomist, Emilie Fillols, says that these trials highlight that herbicide performance can differ greatly depending on environmental conditions and weed species present. "Spring and early summer of 2014 was very hot and dry in the Wet Tropics and this would have influenced herbicide performance compared to more favourable weather conditions," she said.

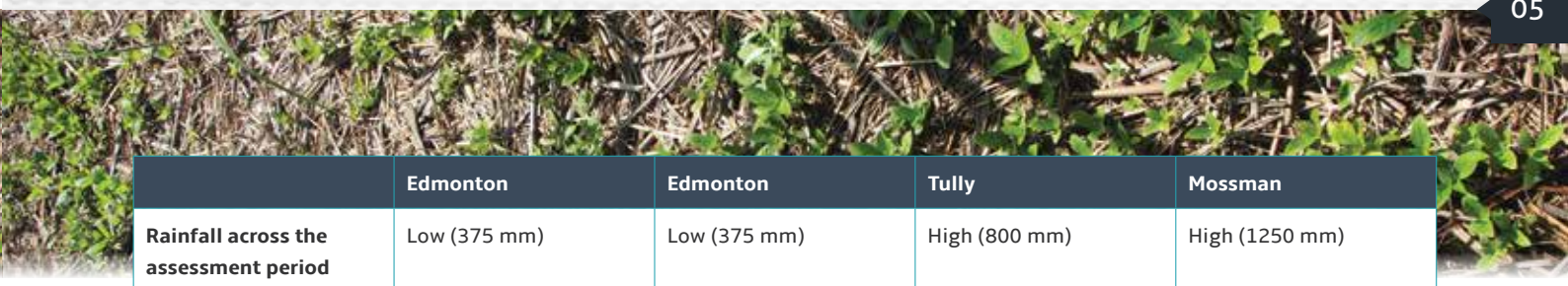
"At our Tully site, it was about two months after spraying before sufficient rain fell to incorporate and activate the herbicides. Also, at the Mossman site, there was alternating very hot and dry weather and flooding events, which were very challenging conditions for herbicides and for the weeds."

"Knowing what weeds to expect in your paddock is important. For example, if you have a mix of grasses, broadleaves and calopo vine, you could use imazapic (e.g. Flame) to control the grasses and broadleaves but you would have to follow-up with a knockdown spray suitable for calopo, for example Actril® DS. Likewise, isoxaflutole, (e.g. Balance®) is generally good on grasses and broadleaves or legume vines but has trouble controlling square weed. A follow-up knockdown spray of Agtryne or Actril® DS might be necessary."

"Our later trials are showing that Bobcat® i-MAXX (imazapic plus hexazinone) will probably be another alternative for diuron based herbicides in the Wet Tropics; giving control of a broader range of weeds. AmiTron® is also promising, although this product is yet to be approved by the APVMA."

"Our second series of trials are being assessed now and we will see if their performance differs this season compared to last season."

SRA acknowledges the funding contribution from the Queensland Department of Agriculture and Fisheries towards this research activity.



	Edmonton	Edmonton	Tully	Mossman
Rainfall across the assessment period (Dec, Jan, Feb)	Low (375 mm)	Low (375 mm)	High (800 mm)	High (1250 mm)
Drainage	Well drained schists and volcanic, loam	Well drained schists and volcanic, loam	Well drained alluvial	Poorly drained clay with seasonal waterlogging
Spray date	17/9/2014	19/11/14	26/9/14	27/11/14
Time from spraying to sufficient rainfall for incorporation (days)	80	17	63	9
Dominant weed types	**Vines** Calopo, red convolvolus	**Vines** Calopo **Broadleaves** Square weed	**Grasses** Awnless barnyard grass **Broadleaves** Blue top	**Grasses** Sour grass **Broadleaves** Square weed
Minor weed types	**Broadleaves** Square weed, ludwigia, sicklepod, spiny spider flower **Grasses** Green summer grass, couch	**Grasses** Sour grass, Guinea grass, summer grass, green summer grass	**Vines** Pink convolvulus **Sedges** Navua sedge	**Vines** Calopo **Sedges**
Barrage or Velpar® K4™ DF® at 4 kg/ha (reference treatment)	The high rate of Barrage or Velpar® K4™ DF® gave consistently good control of **all weed species** across all sites. Reduction in weed coverage was between 95-100%, compared to the untreated plots, for more than 13 weeks after the first incorporating rainfall.			
Barrage or Velpar® K4™ DF® low rate 0.9 kg/ha	The low rate of Barrage or Velpar® K4™ DF® did suppress **broadleaf** and **vine** germination for about four to five weeks after the first incorporating rainfall, with weed reductions between 60-70%; but effectiveness declined rapidly after this or as soon as heavy rainfall occurred. It was variable in its effectiveness against grasses, with little control of them at the Tully site.			
AmiTron®	AmiTron® gave good control of **vines**, **broadleaves** and **sedges** for seven to nine weeks after the first incorporating rainfall, achieving a reduction in weed coverage of between 80-95%; except at the Mossman site where weed coverage was reduced by about 60%. The effectiveness of AmiTron® declined after seven to nine weeks with the reduction in weed coverage compared to the untreated plots falling to 50-65% after about 13 weeks after the first incorporating rainfall. The AmiTron® label is likely to include recommended mixtures to give better grass control than with AmiTron® alone.			
Flame®	Flame® controlled **broadleaves** and **grasses** well for eight to nine weeks after the first incorporating rainfall, at the Tully and Edmonton sites, achieving about a 90% reduction in coverage from these weed types. It did not control **calopo** vine well, but did control **red convolvulus** very well. Its effectiveness on grasses and broadleaves declined after eight to nine weeks, with about 70% reduction in coverage 13 weeks after the first incorporating rainfall. Flame did not perform well on the Mossman site, which experienced hot, dry conditions followed by waterlogging.			
Balance®	Balance® gave good control of **grasses** and **vines** at Edmonton and Tully for about five weeks after the first incorporating rainfall, until heavy rain started to fall. It is possible that the herbicide was leached below the weed seed depth. It did not control **square weed** well. At the Mossman site the herbicide did not work well at any stage, again probably due to the extreme weather conditions.			
Clincher® Plus	Clincher® Plus failed to control any of the weed species at all sites. This is because metolachlor must be applied to moist soil **AND** be incorporated within 24 hours of application. As all sites were dryland, these conditions were not met.			

Note: Bobcat® i-MAXX was not registered at the time of these trials. It has been added in 2015-16 trials.

Treatment	6 weeks after incorporation	12 weeks after incorporation
Barrage or Velpar® K4™ DF® at 4 kg/ha (reference treatment)		
Barrage or Velpar® K4™ DF® low rate 0.9 kg/ha		
AmiTron®		
Flame®		
Balance®		
Clincher® Plus		
Untreated		

Note: Photos from Edmonton (Site B) where herbicides received incorporating rainfall 17 days after spraying.