

# Awnless barnyard grass management: Flame application parameters

## Background

In early 2007, the first population of glyphosate resistant awnless barnyard grass (*Echinochloa colona*) was confirmed in northern NSW. The paddock had a long history of winter cropping together with a heavy reliance on glyphosate in the summer fallow. This commercial experience, together with recent QPIF modeling outcomes, highlights that we are approaching a very dangerous situation due to the overuse of glyphosate.

Barnyard grass is typified by multiple germinations during the spring/summer. This characteristic frequently results in the need for multiple fallow sprays. An effective residual herbicide could allow a reduction in fallow sprays and consequently reduce the selection pressure on glyphosate. Flame<sup>®</sup> (imazapic 240 g/L) was chosen for this study as it can provide very effective residual control of a range of grasses and broadleaf weeds, however variability in performance has often been an issue.

## Project aims

1. To investigate the impact of application volume and droplet size on Flame efficacy and reliability
2. To examine whether application timing just prior to rainfall has any impact on Flame reliability

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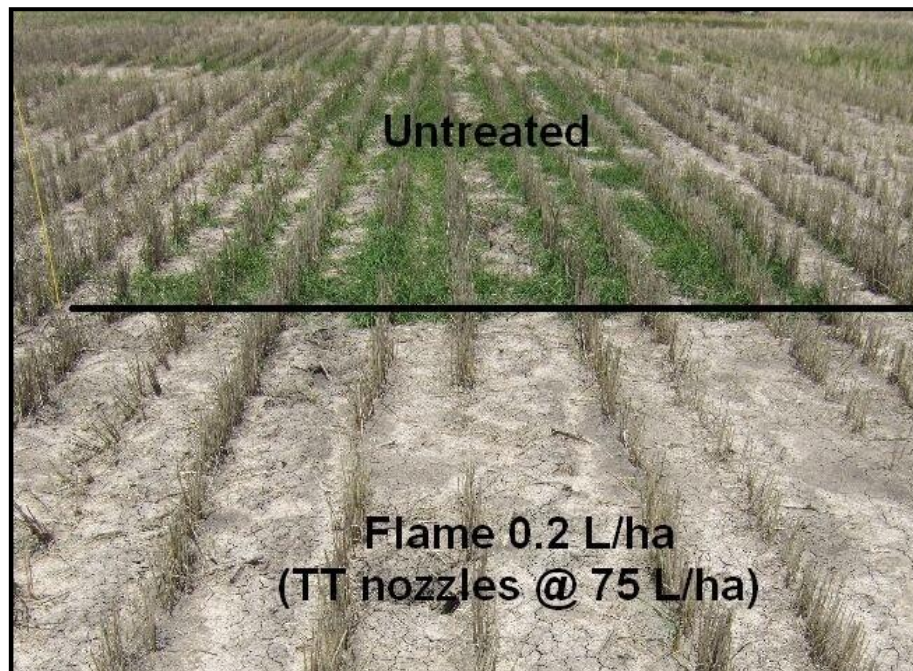
## ***Results in a nutshell***

### ***Barnyard grass control:***

- *High levels of initial control were obtained across 3 of the 4 trials*
- *Poor initial control levels where Flame applied 10-14 days after 25 mm rain event*
- *Good levels of control at 57-84 days after application in all trials*
- *Nozzle type (droplet size) had little impact on level of control*
- *Varying application volume from 50-100 L/ha had little impact on control*
- *No benefit observed by delaying application to shortly prior to a rain event*

### ***Overall:***

- ***Application PRIOR to weed germination appeared more important than application parameters***
- ***Useful tool in high barnyard grass situations but no silver bullet***
- ***Also consider in early spring between summer crop harvest and long fallow winter cereal crop***



*Bullarah 1, 3 Jan 2008, 41 days after application*

## Trial design

NGA established four small plot trials in November 2007 to investigate basic application parameters and better understand their impact on level of barnyard grass control. All trials were established at sites that had 'commercially concerning' populations of barnyard grass in the summer of 2006/07. Treatments were applied either shortly after a fallow knockdown spray (Bellata site, double knocks of paraquat 1.2 L/ha applied 7 and 2 days pre Flame) or onto a bare soil fallow situation (other 3 sites). There were three replicates in all trials.

Flame at 200 mL/ha was applied at three total application volumes (50, 75 and 100 L/ha) and at four droplet sizes (fine, medium, coarse and extremely coarse). This was achieved using XR, TT, AM and TTI 110015 nozzles respectively. All combinations of volume and droplet size were evaluated. Treatments were applied at a constant pressure of 230 kPa with speed of travel adjusted to generate the specified application volumes.

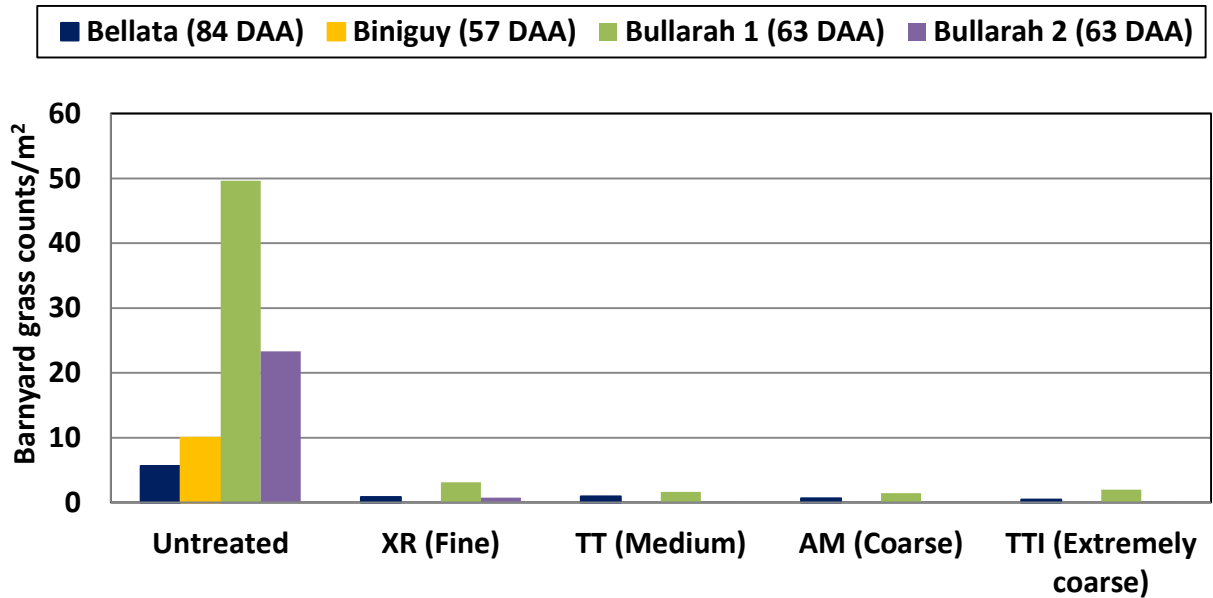
## Assessment

1. **Barnyard grass control:** visual biomass reduction with final weed counts 8-12 weeks after application

## Multi-trial summary

### Droplet size impact

#### Barnyard grass control by nozzle (droplet size)



DAA=days after application

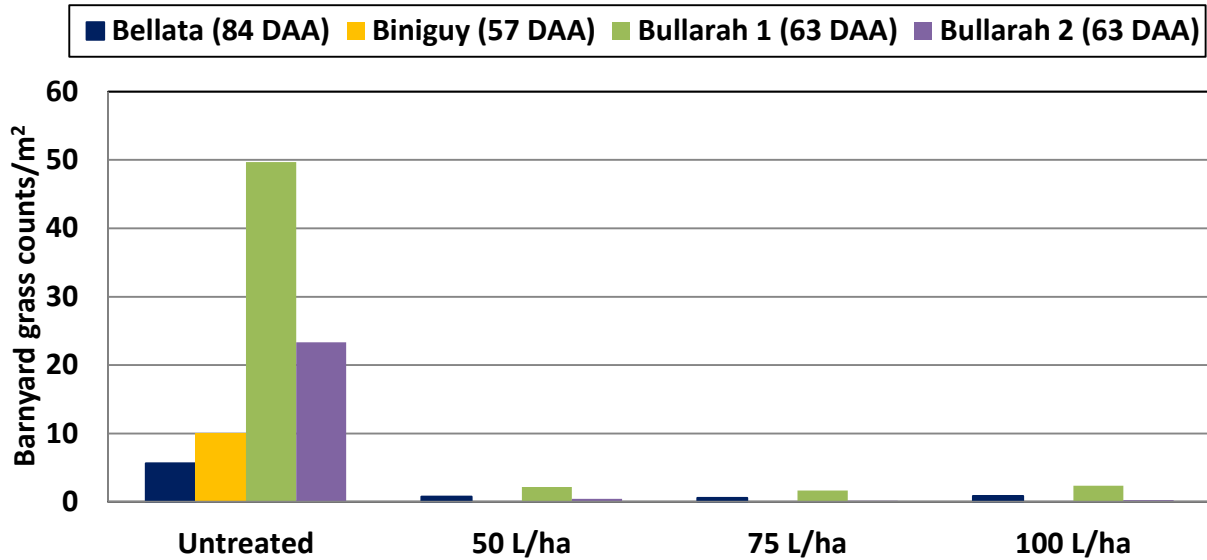
No significant difference in control between any droplet size in any trial or overall

#### Key messages – droplet size

- Droplet size had negligible impact on level of weed control in any trial
- Certainly no improvement by using a Fine droplet size

## Application volume impact

### Barnyard grass control by application volume



DAA=days after application

No significant difference in control between any application volume in any trial or overall

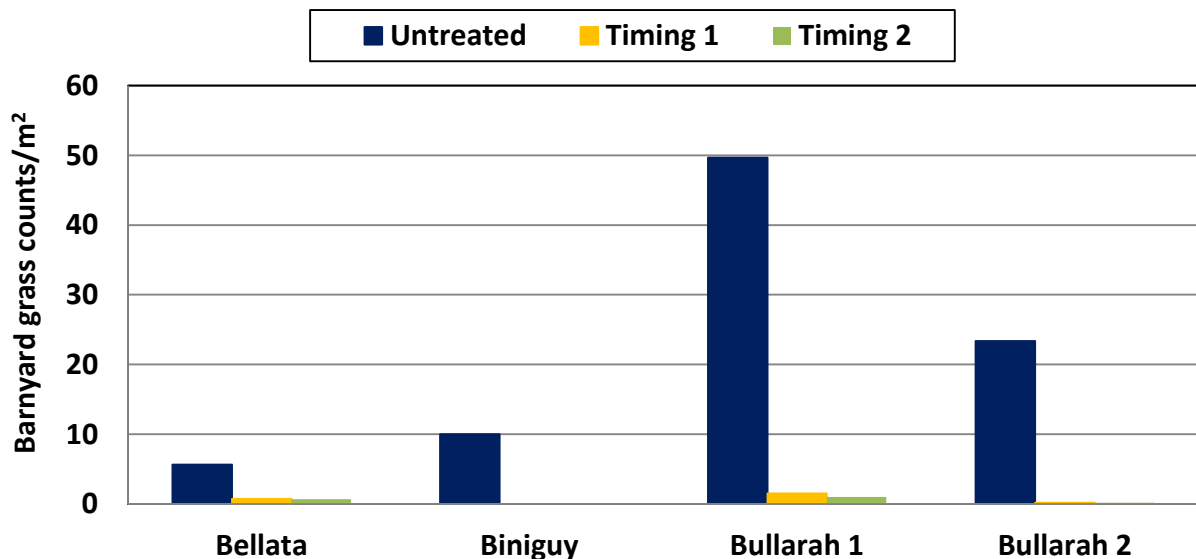
### Key messages – application volume

- Varying application volume from 50-100 L/ha had negligible impact on level of weed control in any trial
- Greater than 95% weed control was still obtained 8-12 weeks after application at 3 of 4 sites with ~87% mean control only achieved at Bellata

## Timing of application impact

Two applications were made in each trial. Timing 1 was the main trial timing. Timing 2 was a delayed spray attempting to apply shortly prior to a rain event. The interval between Timing 1 and 2 varied from 3-10 days with rain events of >2.5 mm occurring at all sites within 1 day of Timing 2. Flame at 200 mL/ha was applied in 50 L/ha volume at Timing 2 through both TT and AM nozzles.

### Barnyard grass control by application timing



No significant difference in control between any timing in any trial  
Results are means of TT and AM results at 50 L/ha for Timing 1 and 2

### Key messages – application timing

- No clear benefit obtained by timing shortly pre rainfall
- Timing prior to weed germination appeared more important than timing prior to rainfall