

F10. crop topping trial, H-MRZ (Wagga Wagga), New South Wales

Aim

To test the adaptability and yield potential of current and new field peas varieties to crop topping over a range of timings in southern NSW to provide an additional weed control method for problem weeds ie ARG.

Treatments

Varieties:	Kaspa, Yarrum, Sturt, Maki, PBA Twilight, PBA Gunyah, OZP0703 OZP0901,
Sowing dates:	26 June 2010
Plant populations:	Targeted 50 plants/m ²
Row Spacing/Stubble:	30cm, direct drilled into wheat stubble
Fertiliser:	Legume Starter @ 115kg/ha at sowing
Crop topping:	Gramoxome® 800ml/ha @ 100L water/ha (4 th , 16 th & 26 th November)

Results and Interpretation

Grain yields - There was significant effects detected from variety and crop topping timings ($P < 0.005$). There was not interaction of variety and crop topping timing detected. Yield was severely penalised when crop topping occurred too early (earliest treatment). All varieties (even early maturing types) were too physiologically immature and suffered up to 50% yield loss. The timing of this spray is depicted in the photos below, clearly illustrating that even the fastest maturing types were yet to show signs of turning. (yellowing).

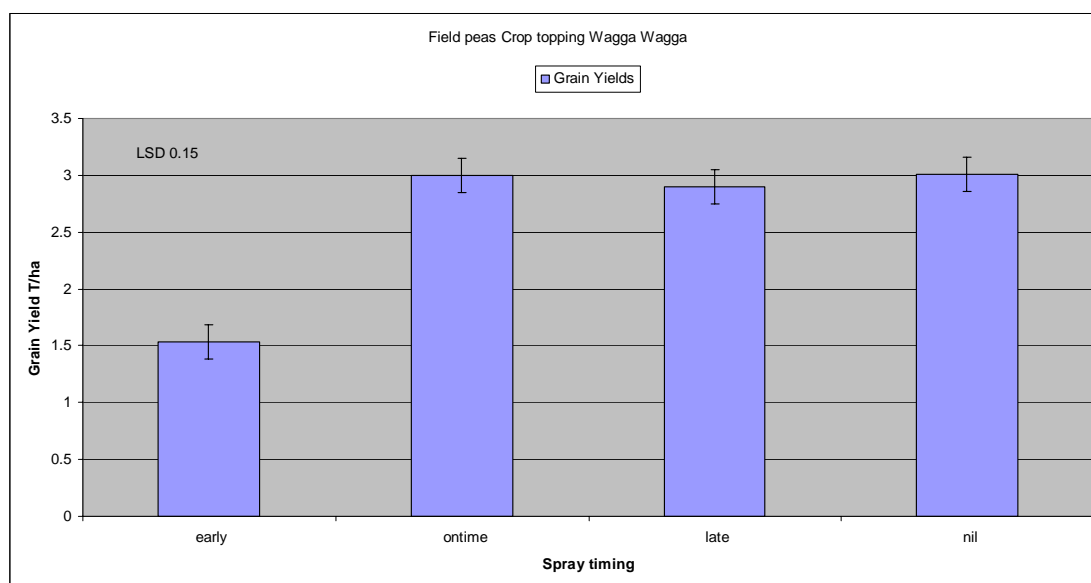


Figure F10.1. The main effect of crop topping treatment on grain yield (t/ha) of field peas at Wagga in 2010.

Further to this, the “ontime”, “late” and “nil” sprays maintain maximum yields without any yield penalties. The “ontime” was only 14 days later on the 16th November then the early spray. (see photos below).

The stage of the crop varied at this timing as the fastest maturing types (PBA Oura, Twilight, Gunya, Yarrum) had well and truly begun to turn, whilst late types (ie Kaspa) had only just begun. Whilst no interaction was detected between timing and variety at the 95% level, there were significant differences at the 90% level. This emphasises considerable thought and understanding be given to define crop maturity, variety and timing of crop topping. Obviously faster maturing varieties provide a wider window of opportunity to synchronise yield maximization with correct development stage (earlier enough) of the escapee or resistant weed to achieve maximum control.



Figure F10.2. Photographs illustrating the maturity of Yarrum at the early (top) and ‘on time’ (bottom) crop topping treatment applications.

- From the photos it can be seen that the “on-time” spray application was made when full seed development had completed (for early maturing types such as Yarrum) and the chlorophyll loss was highly noticeable. Maturity of later maturing types such as Kaspera was not as advanced at this timing but still at a stage that limited yield loss. Ideally this treatment would have been delayed slightly for later maturing types (ie late timing).
- Weed Control - Whilst the aim of this trial was to test the potential yields and the suitability of each variety to crop-topping, it was noted that any Annual Rye Grasses (ARG) present in the field were fully controlled by the each spray treatment. Some of these grasses escaped selective “Group A” in-crop herbicide applications. The early and on time coincided with ARG flowering, whilst the late spray was applied during seed development of ARG.

Key Findings and Comments

- Crop topping provides an excellent strategy to control escapee or resistant weeds in field pea crops.
- Yield can be severely penalised if crop topping occurs too early.
- Correct variety choice and careful timing of crop topping is essential
- Varieties should be selected to achieve maximum yield simultaneously with maximum weed control.
- Ontime spraying achieved excellent weed control as annual ryegrass and wild oats were at the flowering stage.