B6 Row Spacing x Disease Management x Stubble, HRZ Southern (Lake Bolac), Victoria

Aim

To investigate if optimum chocolate spot management strategies change in different row spacing's and standing and burnt residue across a range of faba bean varieties.

Experimental Treatments

Varieties: Farah, Nura, PBARana, AF03063.

Fungicide Regimes:

Regime	Chemical & Application Rate[1]	Timing
Complete (Fort)	chlorothalonil 720 @ 2L/ha carbendazim 500 @ 500ml/ha	Fortnightly starting 6 weeks after emergence.
Double Choc (Cx2)	carbendazim 500 @ 500ml/ha	Early and late flower
Triple Choc (Cx3)	carbendazim 500 @ 500ml/ha	Early, mid and late flower
Nil	Nil	Nil

1. Refers to application rate of the product

Row Spacings/Stubble: 18 cm row spacing, slashed stubble (sl18),
18 cm row spacing, burnt stubble (B18),
36 cm row spacing, inter-row, slashed stubble (sl36),
36 cm row spacing, inter-row, burnt stubble (B36).

Note: Stubble treatments were sown as independent trials.

Other Details

Sowing date: 20 May.
Fertiliser: MAP + Zn @ 100 kg/ha at sowing.
Plant Density: 20 plants/m^2.

Results and Interpretation

- Key Message: Yield loss from disease in PBA Rana was significantly less than other varieties compared in this trial.

- Disease Damage – Due to suitable winter and spring time conditions, disease pressure was high in the faba beans. Aschochyta blight and chocolate spot were noticed in late August and rust early September. During September and October, rust became the predominant disease, probably because the trial was designed to assess management options for chocolate spot and chemicals used only have limited efficacy on rust. The level of disease was assessed November 15, just prior to the beginning of leaf drop and maturity.

  In the slashed stubble trial disease scores were less for all varieties and fungicide regimes than observed in the burnt stubble (Fig. B6.1). However, the general response of varieties across the fungicide regimes was relatively consistent in the two trials. The 'Nil' treatment was significantly worse than the 'Cx2' and 'Cx3' treatments, which were worse than the 'Fortnightly treatment'. Among varieties PBA Rana showed the lowest level of disease, while Farah and AF03063 had the highest levels of disease (Fig. B6.1).

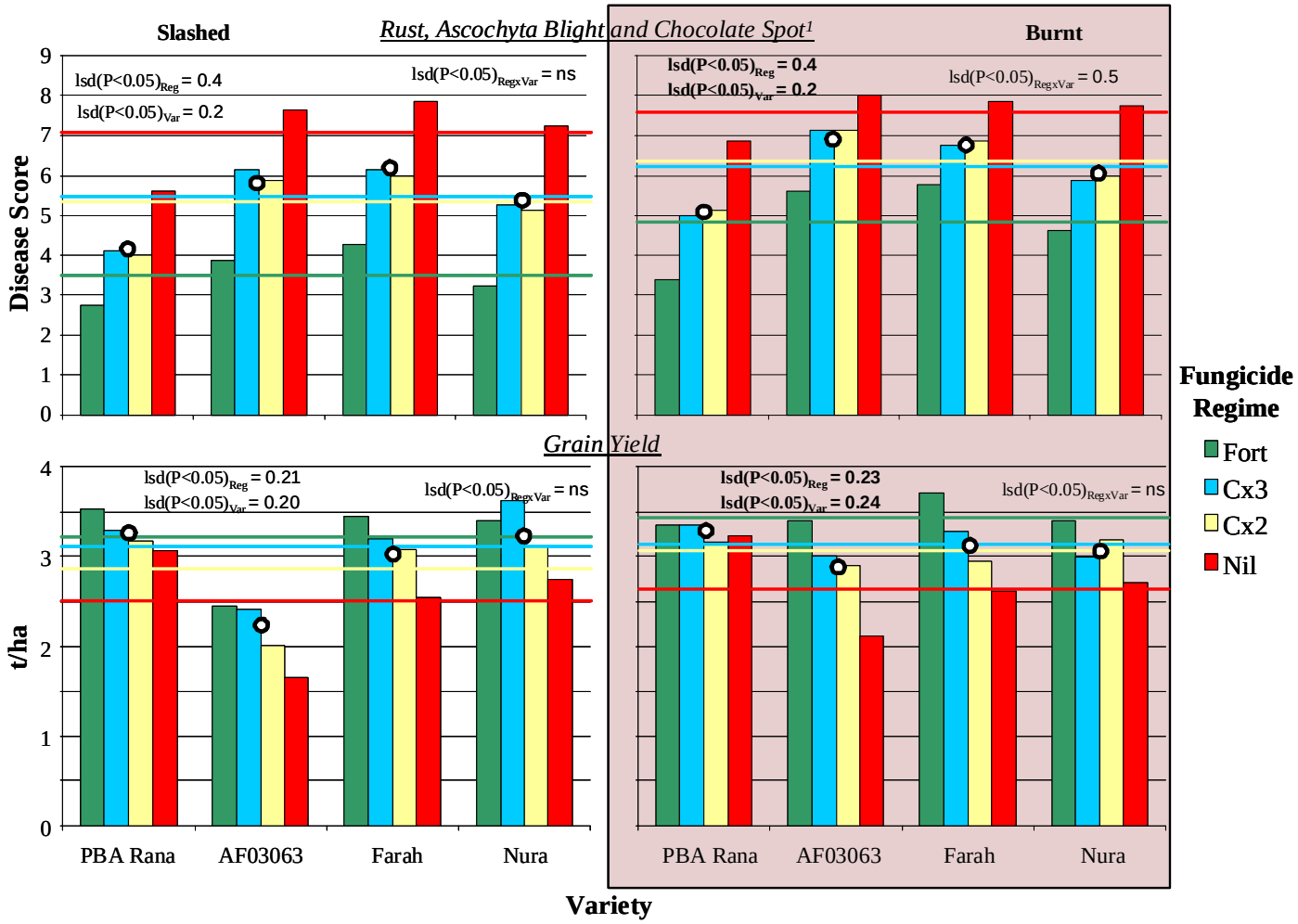

Figure B6.1. The interaction effect of fungicide regime and variety on disease damage score recorded October 25 (1 – no symptoms present, 9 – complete plot death) and grain yield of faba beans in slashed and burnt stubble at Lake Bolac 2011. *[1]Disease damage was a combination of Rust, Ascohyta Blight and Chocolate Spot. Rust was the predominant disease present.*

- Grain Yield – Grain yields in 2011 ranged from 3.4 to 3.7t/ha on the burnt stubble and 2.4 to 3.5t/ha on the slashed stubble, both in the fortnightly fungicide regime (Fig. B6.1). Grain yield in the burnt standing stubble and slashed stubble trials were similar for all varieties except AF03063, which was 25% lower in the slashed stubble. The response to fungicide regimes across varieties was relatively similar in both trials. Generally, PBA Rana showed the lowest yield loss and AF03063, was greatest, consistent with visual disease scores. For example, in comparison to the fortnightly regime the yield loss in the 'Nil' treatment for PBA Rana was 13% and 4% in the slashed and burnt stubble, respectively, for Nura, 19% and 20%, for Farah, 26% and 30%, and for AF03063, 32% and 37% (Fig. B6.1). While disease was relatively severe in this trial there appeared to be no effect on seed quality.

Key Findings and Comments

Similar to other pulse crops growing conditions in 2011 were excellent for faba beans, due to extreme rainfall events during the summer of 2010/11 which resulted in soil profiles at or near field capacity at sowing. In addition, temperatures were mild in the in the flowering and podding periods with few frost or high temperatures, so yield potential was high. Stubble retention appeared to have no major effect on grain yield which was inconsistent with results from a similar trial at Rupanyup, where there was a 20% yield loss in burnt stubble. It is unclear, why there were significant differences between the two trial sites. Disease, predominately rust, resulted in grain yield losses of between 5 and 35% . There were clear differences in the susceptibility of varieties to the disease present, and this negatively correlated with grain yield. The variety with the lowest disease scores, had the lowest grain yield loss in the 'Nil' fungicide treatment. Further work will occur in 2012 on a

broader range of varieties and fungicide regimes to control rust. Also despite severe disease in this trial there appeared to be no effect on seed quality. This is indicative of the relatively dry finish to the season meaning that it is less likely for disease to be transferred from the plant or pods onto seed.