

C8 Disease Management, Mid North (Turretfield), South Australia

Aim

To evaluate ascochyta blight (AB) response of new varieties by comparing their susceptibility to known varieties

Treatments

Varieties: Presented in Table 1.

Treatments: Fungicide applied fortnightly

Nil – no fungicide applied

All treatments were inoculated with ascochyta blight infected chickpea straw on July 14, at early seedling growth stage of (between 2 and 4 node).

Table 1. Ascochyta blight ratings of kabuli and desi chickpea varieties sown at Turretfield, South Australia, 2015.

Variety	Foliar Ascochyta Blight Rating#
CICA1156	R *
Genesis™ 090	R
Ambar	R
Genesis™ 079	R
Neelam	R
PBA Slasher	R
PBA Striker	MR
CICA1352	MR*
CICA1452	*
CICA1442	*
PBA Maiden	MR
PBA Monarch	MS
Genesis™ Kalkee	MS
Sonali	S

MS = Moderately susceptible, MR = Moderately Resistant, R = Resistant

*= limited evaluation, #ascochyta blight foliage rating is currently under review as a result of AB infection of earlier R rated varieties such as Genesis™ 090 (SA Sowing Guide, 2016)

Other Details

Sowing date: Mid June

Fertiliser: MAP + Zn (2%) @ 90 kg/ha at sowing

Plant Density: Desi = 50 plants/m², Kabuli = 35 plants/m²

Disease Assessment

AB disease was assessed visually during the growing season on September 22. Assessment was done as; % AB severity/plot = % of nodes infected on a plant x frequency of infected plants where; 0 = no visual disease and 100 = complete disease.

Results and interpretation

- Susceptible desi variety Sonali had the highest level of disease, with a plot severity score of 65%, 45% higher than moderately resistant variety PBA Maiden.
- AB resistant advanced breeding line CICA1156 had the least amount of damage from AB, with an average plot severity score of only 1.5%, followed closely by Ambar, Genesis™ 079 and Genesis™ 090, all of which are rated as resistant to foliar AB.
- A significant interaction was not observed between fungicide treatment and variety for grain yield in 2015. Only a significant varietal response and a treatment response were observed.
- A significant yield benefit was observed when the chickpeas were treated with fungicide applied fortnightly (0.99 t/ha) compared to no fungicide being applied (0.91 t/ha) to control AB.

- Desi varieties Sonali and Ambar were the lowest yielding varieties, while small seeded kabuli Genesis™ 079 was the highest yielding (Table 2).

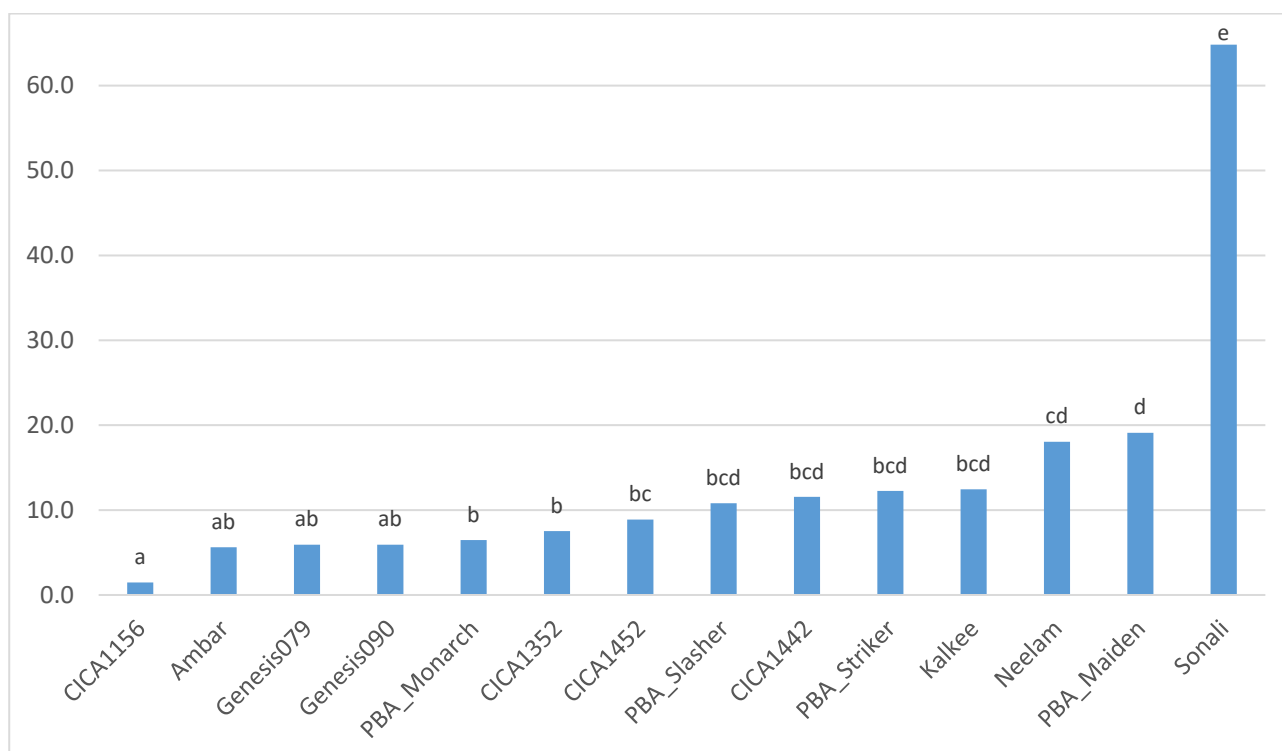


Figure 1. Percentage (%) plot severity of AB damage of untreated desi and kabuli chickpea varieties at Turretfield, South Australia, 2015. Letters indicate significance.

Table 2. Grain yields (t/ha) of kabuli and desi chickpea varieties sown at Turretfield, South Australia, 2015 (ranked from highest to lowest). Letters indicate significance.

Variety	Yield (t/ha)	Significance
Genesis™ 079	1.18	a....
CICA1442	1.05	ab...
Genesis™ Kalkee	1.03	.b...
CICA1352	1.02	.bc..
CICA1452	1.00	.bc..
PBA Maiden	1.00	.bc..
PBA Slasher	0.99	.bc..
Neelam	0.93	.bcd.
PBA Monarch	0.93	.bcd.
Genesis™ 090	0.92	.bcd.
CICA1156	0.91	.bcd.
PBA Striker	0.88	..cd.
Ambar	0.80	...de
Sonali	0.70e
LSD (P<0.05)	0.14	

Key findings and comments

- There was no interaction between fungicide treatment and variety for grain yield across all varieties in this trial, a similar result to 2014 but opposed to that found in previous years. As in 2014 this result was surprising given the significant foliar disease infection observed in the susceptible varieties but was most likely due to the hot and very dry spring conditions which prevailed, halting disease progression and limiting grain yield. However, although interactions were not significant, it was noted that the line with the highest foliar AB infection level, Sonali, was the lowest yielding variety.

- Although a significant treatment response was observed, there was only a 0.08 t/ha yield benefit from applying a fortnightly fungicide treatment as an average across all varieties. However, previous research shows varieties rated S and MS-MR will benefit from strategic fungicide applications during the growing season to control disease.
- An update of the AB susceptibility rating for all chickpeas is under review following observations of foliar AB infection on Genesis™ 090 (rated as R) at multiple sites in SA and Victoria in 2015.
- Due to the above finding and similar reports in commercial crops in SA in 2015, it is recommended that all chickpea varieties will require monitoring through the growing season for foliar AB infection and sprayed upon detection of disease to prevent spread to pods and seeds. All current chickpea varieties are susceptible to seed staining from AB, and require application of fungicides at the onset of podding. Varieties rated as MR and MS-MR will also benefit from strategic fungicide applications during the growing season to control disease.