

C7 Ascochyta Blight Susceptibility, HRZ Mid North (Turretfield), South Australia

Aim

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

Treatments

Varieties: Presented in Table 1.
Treatments: Fungicide applied fortnightly (Chlorothalonil 720g/L at 2L/Ha)
Nil – no fungicide applied
All treatments were inoculated with ascochyta blight infected chickpea straw early in the season.

Table 1: Ascochyta blight ratings of kabuli and desi chickpea varieties sown at Turretfield 2014.

Variety	Foliar Ascochyta Blight Rating#
CICA1156	R *
Genesis™ 090	R
Ambar	R
Genesis™ 079	R
Neelam	R
CICA1016	R *
PBA Slasher	R
PBA Monarch	MS
CICA1352	MR*
PBA Maiden	MR
PBA Striker	MR
Genesis™ Kalkee	MS
Sonali	S
07079-1101	?
<hr/> LSD ($P<0.05$)	

S = susceptible 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 previously R rated varieties such as Genesis™ 090 (SA Sowing Guide, 2016)

Other Details

Sowing date: 6th June
Fertiliser: MAP + Zn (2%) @ 90 kg/ha at sowing
Inoculant: Group N
Seed Treatment: P-Pickel T (200ml/100 kg seed)
Plant Density: Desi = 50 plants/m², Kabuli = 35 plants/m²

Disease Assessment

AB disease was assessed visually at two intervals 27th August and 17th September during the growing season. Assessment at both intervals was done as the percentage of leaf area diseased (% LAD), percentage of side branches broken (% SBB) and on a 1 to 9 categorical scale; 1 = no disease symptoms and 9 = highest disease symptoms.

Results and interpretation

- Disease was scored as being low to moderate during the two assessment intervals with the highest disease symptoms observed at the second assessment and only data from this period has been presented in this report.
- A significant ($P<0.001$) varietal response was observed for AB disease infection indicating that varieties differed in the level of AB infection, both foliar infection and stem breakage.
- Sonali was rated as having the highest level of disease symptoms (foliar, stem breakage and on 1-9 scale) compared to all the other varieties (Table 2).

- There was no interaction between fungicide treatment and variety for grain yield across all varieties in this trial as opposed to the findings in the previous year. This result was surprising given the significant foliar disease infection observed between varieties and may have been due to the dry spring conditions which halted disease progression and limited grain yield. However, although interactions were not significant, it was noted that the line with the highest foliar AB infection level, Sonali, incurred a yield reduction from 2.43 t/ha to 1.96 t/ha in the fortnightly spray to the unsprayed treatment respectively.
- There was no significant effect of fortnightly foliar spray fungicide treatment on grain yield and lodging resistance at maturity. However, significant differences in grain yield and levels of lodging resistance between varieties were observed.
- Grain yields ranged between 1.81 t/ha in the moderately susceptible Genesis™ Kalkee and 2.54 t/ha in the moderately resistant PBA Striker.
- PBA Striker and the advanced breeding line CICA1016 yielded higher than all other varieties except 07079-1101, Genesis™ 079, PBA Slasher, Neelam and CICA156 (Table 33).
- Genesis™ 079 was the highest yielding Kabuli variety, but equal to CICA1156 and Genesis090.
- PBA Striker and Genesis™ 079 showed the lowest level of lodging resistance to all the other varieties, consistent with previous findings.

Table 2: AB disease infection of 14 chickpea varieties scored as % Leaf Area Damaged (LAD), % Stem Branch Broken (SBB) and scored on 1-9 categorical scale; 1=no disease symptoms 9= highest disease symptoms at the second assessment interval (17 September) at Turretfield, South Australia, 2014.

Variety	% LAD		Variety	% SBB		Variety	Score 1-9
Sonali	27.46	a...	Sonali	42.77	a...	07079-1101	2.00
Kalkee	19.8	a...	Kalkee	17.72	.b..	Ambar	2.00
Neelam	8.12	.b..	PBA Slasher	4.67	..c.	CICA1016	2.00
PBA Slasher	8.12	.b..	Neelam	3.31	..c.	CICA1156	2.00
Genesis079	7.34	.bc.	PBA Monarch	3.31	..c.	CICA1352	2.00
PBA Maiden	6.45	.bc.	CICA1016	2.96	..c.	Genesis090	2.00
PBA Striker	6.45	.bc.	Ambar	2.86	..c.	Neelam	2.00
CICA1016	5.02	.bcd	Genesis079	1.99	..c.	PBA Maiden	2.00
CICA1352	5.02	.bcd	PBA Striker	1.99	..c.	PBA Monarch	2.00
PBA Monarch	5.02	.bcd	CICA1352	1.93	..cd	Genesis079	2.33
Ambar	3.84	.bcd	07079 1101	1.17	..cd	PBA Slasher	2.33
CICA1156	2.4	.bcd	PBA Maiden	1.17	..cd	PBA Striker	2.33
Genesis090	1.99	..cd	CICA1156	0	...d	Kalkee	2.67
07079-1101	1.17	...d	Genesis090	0	...d	Sonali	4.00

*Square root back transformed data; letters indicate significance within an assessment category only.
#Varieties ranked according to the highest level of disease symptoms for leaf area damage and stem breakage.

Table 3: Grain yields (t/ha) and lodging scores (1-9) of of kabuli and desi chickpea varieties sown at Turretfield, 2014 (ranked by yields).

Variety	Grain Yield (t/ha)	Lodging (1-9 score)
PBA_Striker	2.54	7
CICA1016	2.53	9
07079-1101	2.52	8
Genesis™ 079	2.46	7
PBA_Slasher	2.46	9
Neelam	2.45	8
CICA1156	2.43	9
Ambar	2.33	9
PBA_Maiden	2.29	8
Genesis™ 090	2.28	9
PBA_Monarch	2.25	8
Sonali	2.19	8
CICA1352	2.06	9
Genesis™ Kalkee	1.81	9
LSD (P<0.05)	0.20	0.75