



UPPER CANOLA BLACKLEG - PHENOTYPING

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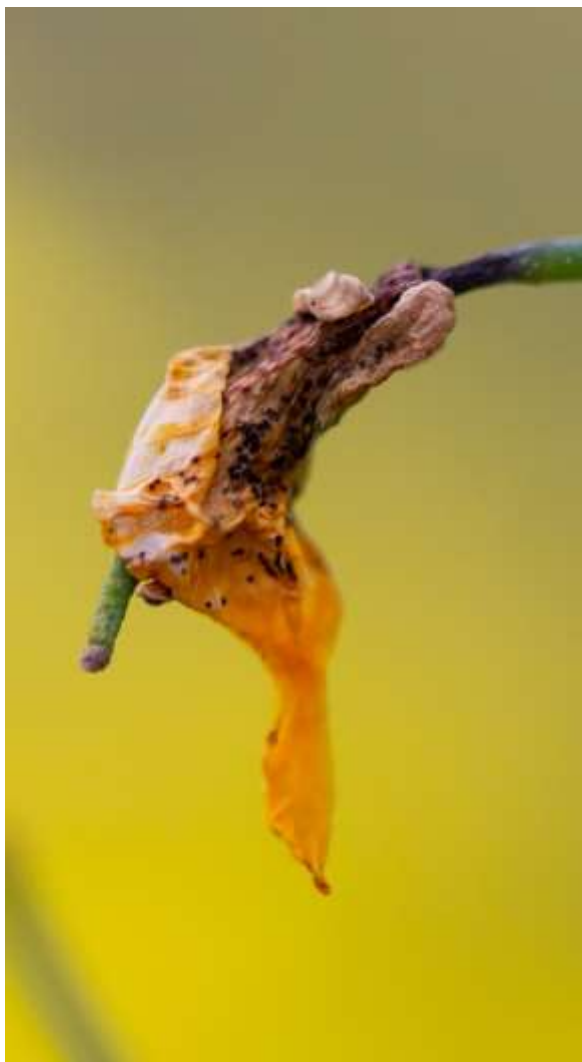


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UPPER CANOPY BLACKLEG INFECTION UCI

Symptoms include flowers, peduncles, stems and branches





- Initial flower infection does not cause yield loss unless it has time to progress into vascular tissue damage.
- Severe damage become significant at swathing time.



UCI MAJOR GENE RESISTANCE

Check for leaf lesions at elongation growth stage



- Effective major gene resistance
- Will not get UCI



- No effective major gene resistance
- May get UCI (depends on quantitative resistance)

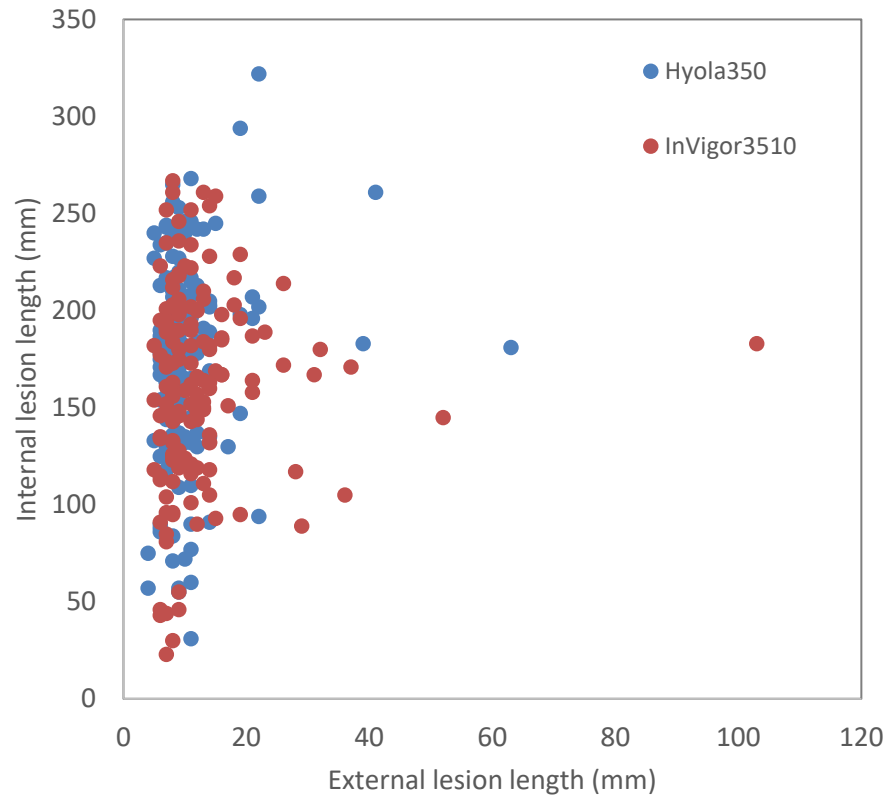
UCI QR RESISTANCE



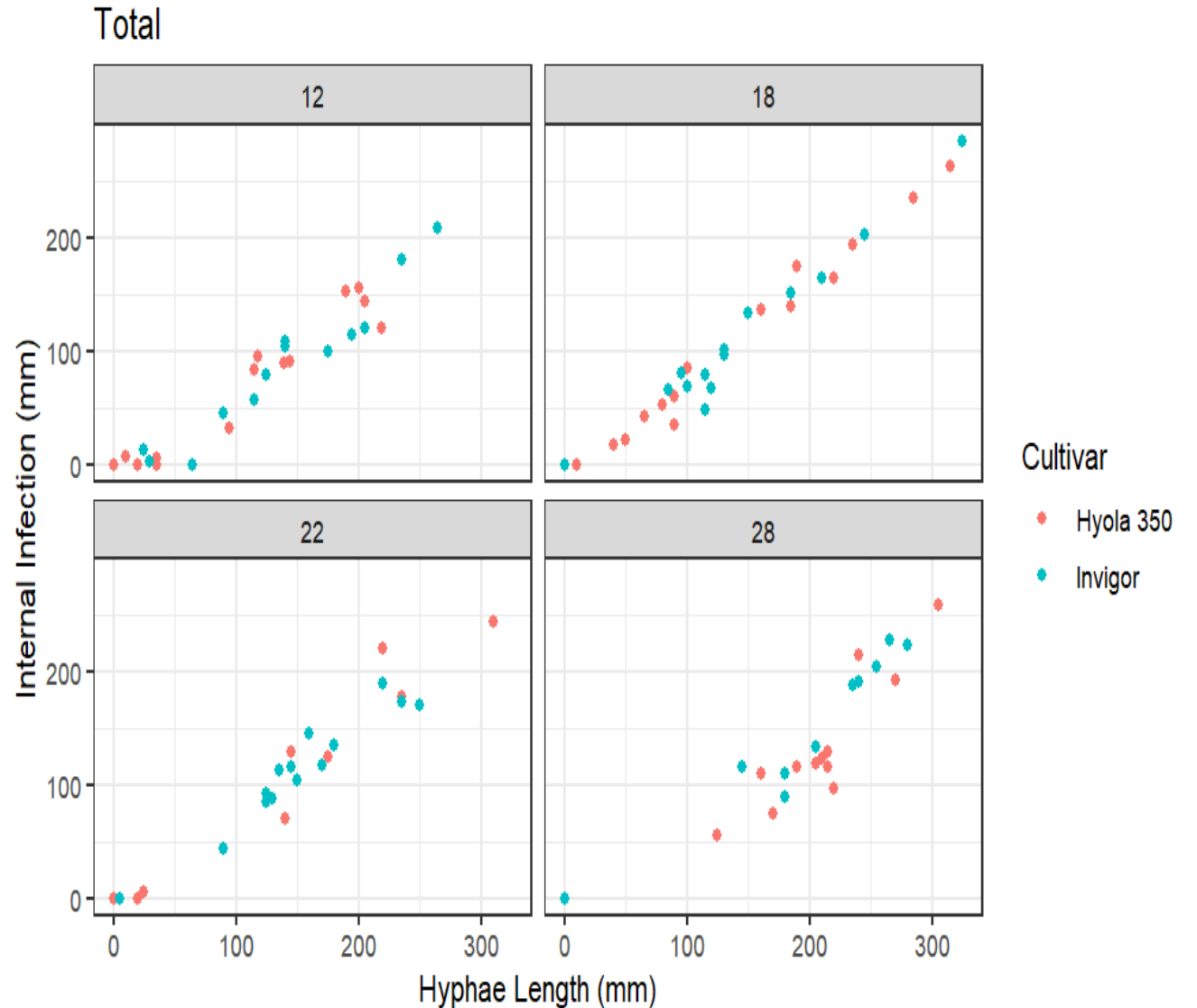


2021

External lesion length not always correlated with internal lesion length



Internal lesion length strongly correlated with presence of hyphae using fluorescent isolate



DIFFERENTIAL ISOLATES FOR UCI SCREENING - INDIVIDUAL ISOLATES COMPARED TO MIXED ISOLATES

R Group	Rating	Average of all isolate scores	Mixture score
A	MR	0.3c	0.8c
B	MS-S	4.9a	6.0a
B	MR	0.3c	0.2c
B	R	1.5b	1.4b
B	R-MR	0.3c	0.0c
None	S	5.5a	6.5a

UCI disease

Phenotype =

Host (Gh) x Pathogen (Gp) x Environment X Date to 1st flower/phenology
x Thermal degree days (time from infection to scoring) x Terminal stress



6 November



15 November



2022 – cool finish

Lushness factor.

If stem is green and lush at 50%
seed colour change then lesions
may not progress. Yield loss may
be minor??

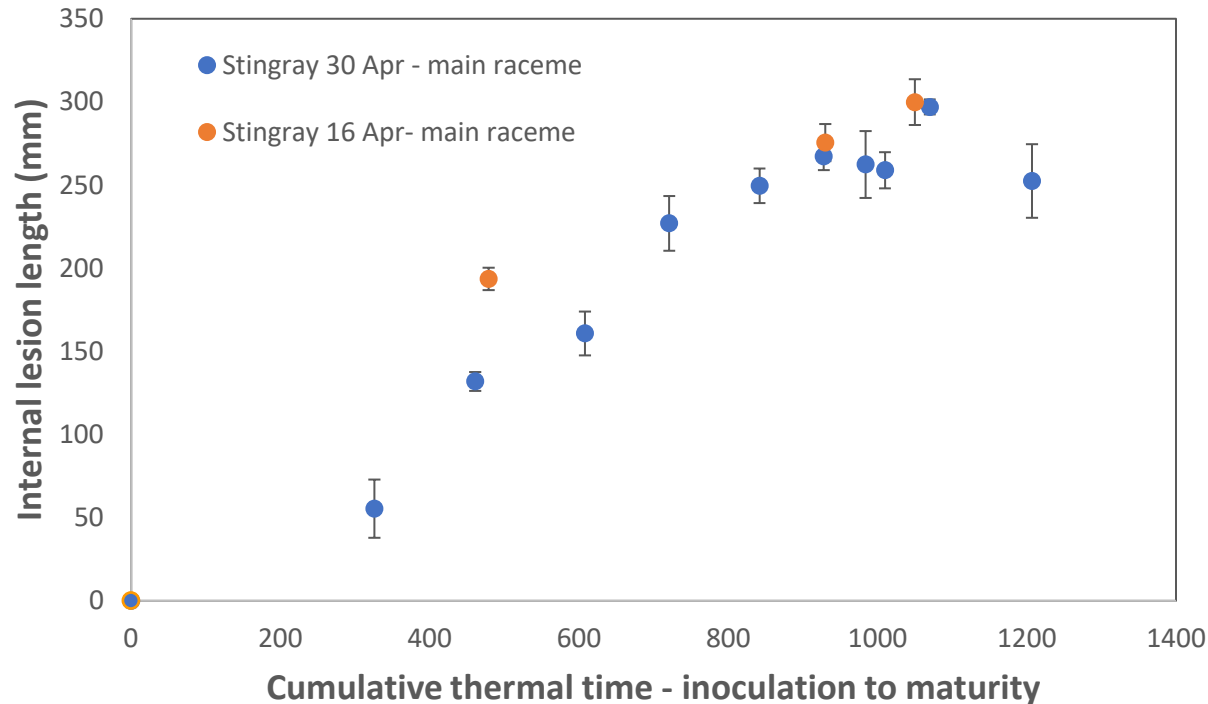
STANDARDISED FOR THERMAL DEGREE DAYS (1300DD)

UCI disease

Phenotype =

Host (Gh) x Pathogen (Gp) x Date to 1st flower/phenology x

x Thermal degree days (time from infection to scoring) x Environment x Terminal stress

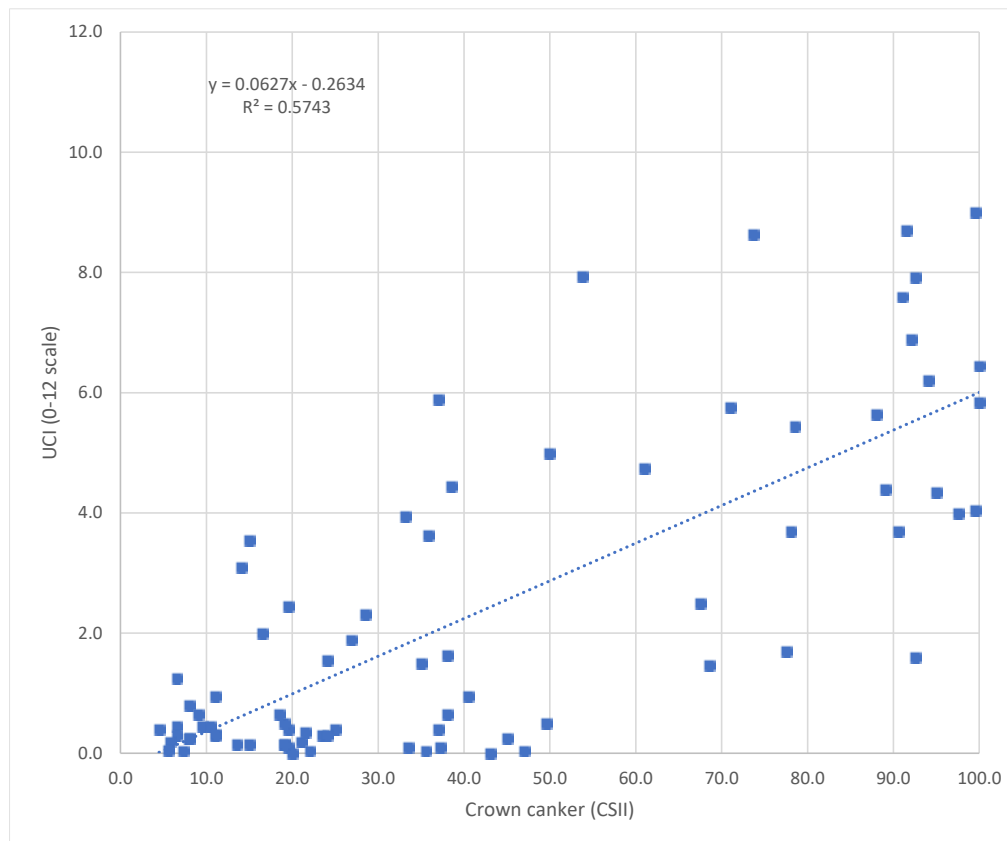


	Glasshouse		Shadehouse	
Cultivar	1300	Maturity	1300	Maturity
A, MS	3	5	1	1
A, MR	2	1	6	7
ABDF, R	6	6	3	4
ABD, R	5	4	2	3
B, R-MR	1	2	7	2
C, MR	4	3	4	5
C, MS	8	8	5	6
None	7	7	8	8

DOES BLACKLEG RATING INFLUENCE UCI RESISTANCE?

6 cultivars screened against 20 blackleg isolates and isolate mixtures

Figure 1. Correlation between crown canker (CSII) and upper canopy infection (0-12 scale) for all MGR-compatible isolate x cultivar interactions.



UCI SCREENING PROTOCOL

2022 protocol

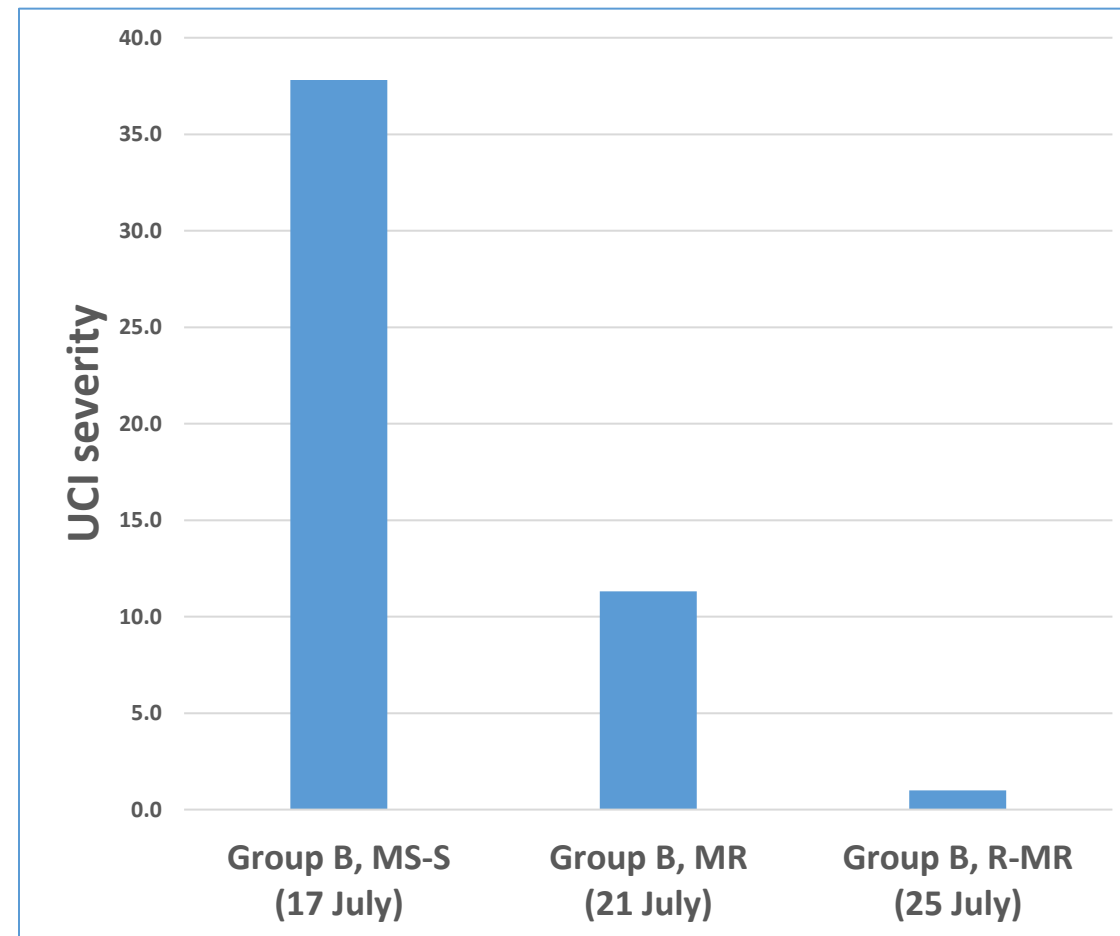
1. Sow April 1 to ensure over 1300dd before scoring
2. Inoculate at 30% bloom.
3. Inoculate the leaf axil.
4. Scrape wound.
5. Pipette inoculum.
6. Mixed isolates.
7. Score at 1300dd? plant maturity?
8. Score external lesion length, internal lesion length, darkened pith

UCI QR FIELD

Genetic resistance identified in 2020 Glasshouse study was replicated in 2021 field.



All 3 commenced flowering
17th to 22nd July



Field and regional UCI resistance



	days to first flower	Stem lesions 0-4	Branch lesions 0-4	Darkened branches %	Mid-branch pith %	Lower stem pith %
NSW						
Wagga Wagga						
Group B, MS-S	104	1.3	1.3	0.5	0.8	13.3
Group B, MR-MS	104	0.7	0.7	0.0	1.7	5.8
Group B, R	104	1.0	0.3	0.2	1.7	4.2
SA						
Cummins Landmark						
Group B, MS-S	94	3.0	3.3	1.3	4.2	25.0
Group B, MR-MS	98	2.0	2.3	0.7	5.8	8.3
Group B, R	96	2.7	1.7	2.3	2.5	18.3
Vic						
Horsham						
Group B, MS-S	105	1.3	0.0	0.7	0.8	15.0
Group B, MR-MS	107	0.0	0.0	0.3	0.0	3.3
Group B, R	103	0.0	0.0	0.3	1.7	1.7
Kaniva						
Group B, MS-S	99	1.0	0.7	1.5	2.5	11.7
Group B, MR-MS	97	0.3	0.7	0.3	0.0	4.2
Group B, R	99	0.7	0.0	2.2	0.8	5.0
Lake Bolac						
Group B, MS-S	107	1.0	0.3	0.3	5.0	10.0
Group B, MR-MS	102	0.0	0.0	0.0	10.8	6.7
Group B, R	107	1.0	0.3	0.3	1.7	5.8
WA						
Kendenup						
Group B, MS-S	83	1.7	1.2	0.5	0.8	7.5
Group B, MR-MS	89	0.7	0.2	0.0	0.0	1.7
Group B, R	93	0.8	0.7	0.0	0.0	0.8

2021 UCI RESISTANCE YIELD RESPONSE TO 30% BLOOM FUNGICIDE

2022 yield data – 6 sites

	Average 5 sites	Lake Bolac, Vic
Group B – UCI susceptible?	103.1 %	117.1 %
Group B – UCI Moderately resistance?	100.7 %	106.3 %
Group B – UCI Resistant?	101.5 %	107.0%

2022 UCI field



- Screen 100 lines in pots
- Surround bird cage with canola stubble.
- Sow April 1st so that most cultivars flower in early July and there is no disease escape.
- Sow control lines every week for 4 weeks so that all cultivars flower in the same window as a known control.
- Record date of 1st flower.
- Score at plant maturity.