

UNDERSTANDING THE PRE-HARVEST SPROUTING SUSCEPTIBILITY OF NEW WHEAT VARIETIES

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CORPORATION

Pre-harvest sprouting

- GxExM
- Management options are limited
 - Harvest as soon as practical after maturity
 - Choose varieties with low risk of low falling number

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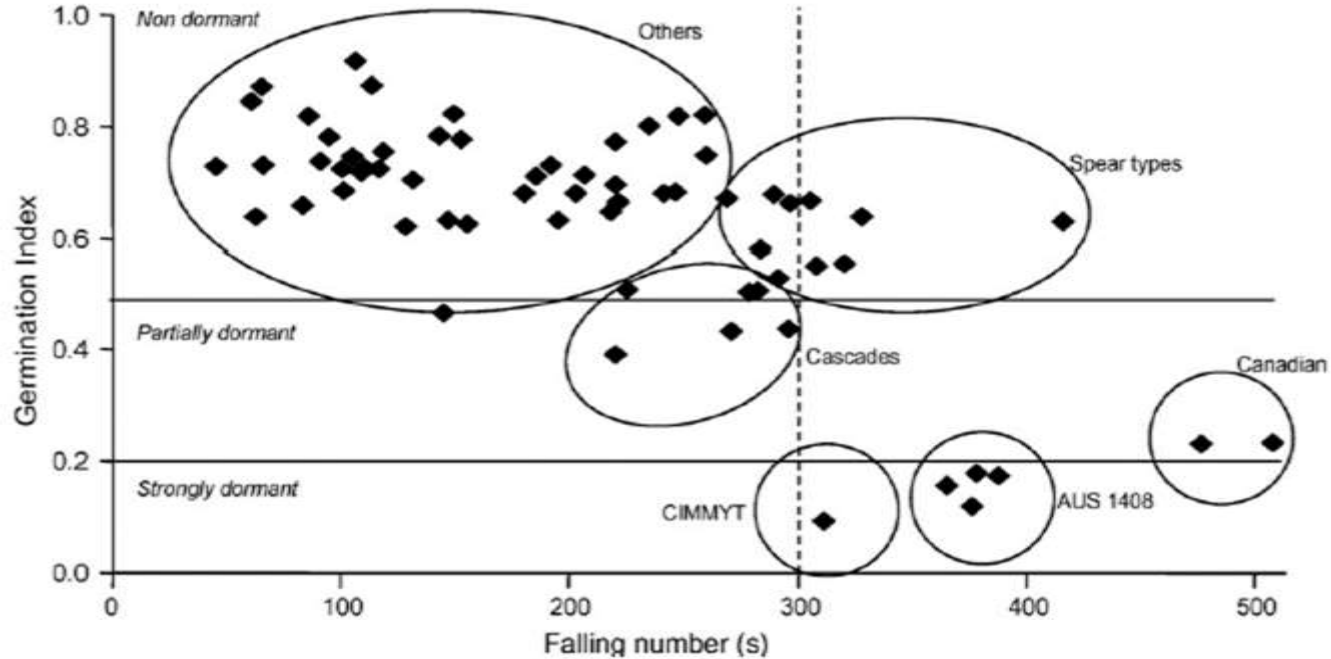
Aim: To rate varieties for their susceptibility to pre-harvest sprouting and low FN at harvest.

How is pre-harvest sprouting resistance measured?

- Germination Index
 - Measure of grain dormancy
 - Quick and repeatable
 - Influenced by growing environment and time of sampling



GI vs FN

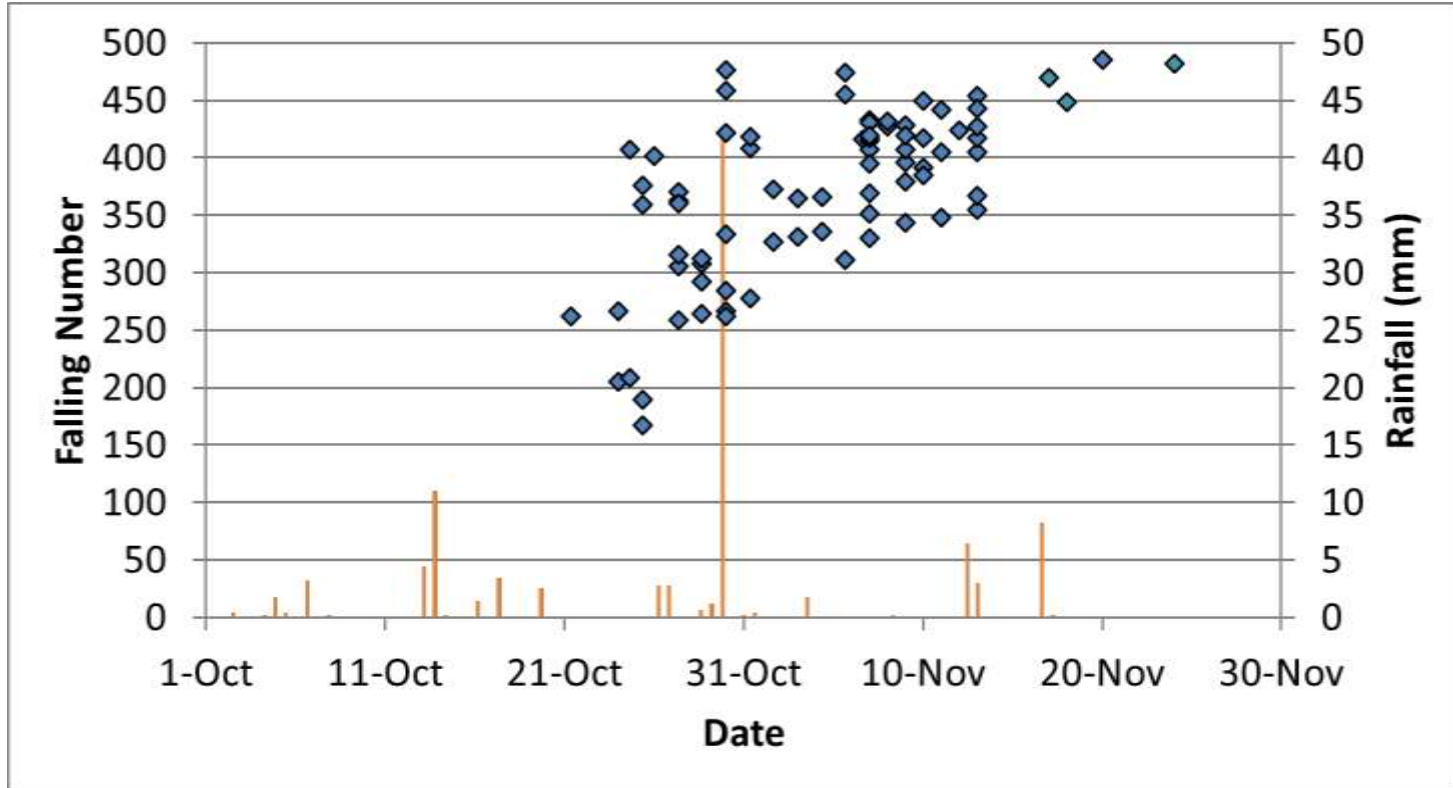


Source: Biddulph TB, Plummer JA, Setter TL, Mares DJ (2008), Seasonal conditions influence dormancy and preharvest sprouting tolerance in wheat (*Triticum aestivum* L.). *Field Crops Res* 107:116–128

How is pre-harvest sprouting resistance measured?

- Germination Index
 - Measure of grain dormancy
 - Quick and repeatable
 - Influenced by growing environment and time of sampling.
- Field data
 - Opportunistic – reliant on ‘favourable’ conditions to induce low FN
 - Maturity effects – need to be taken into account

Falling number – 2017 field data



Strategy

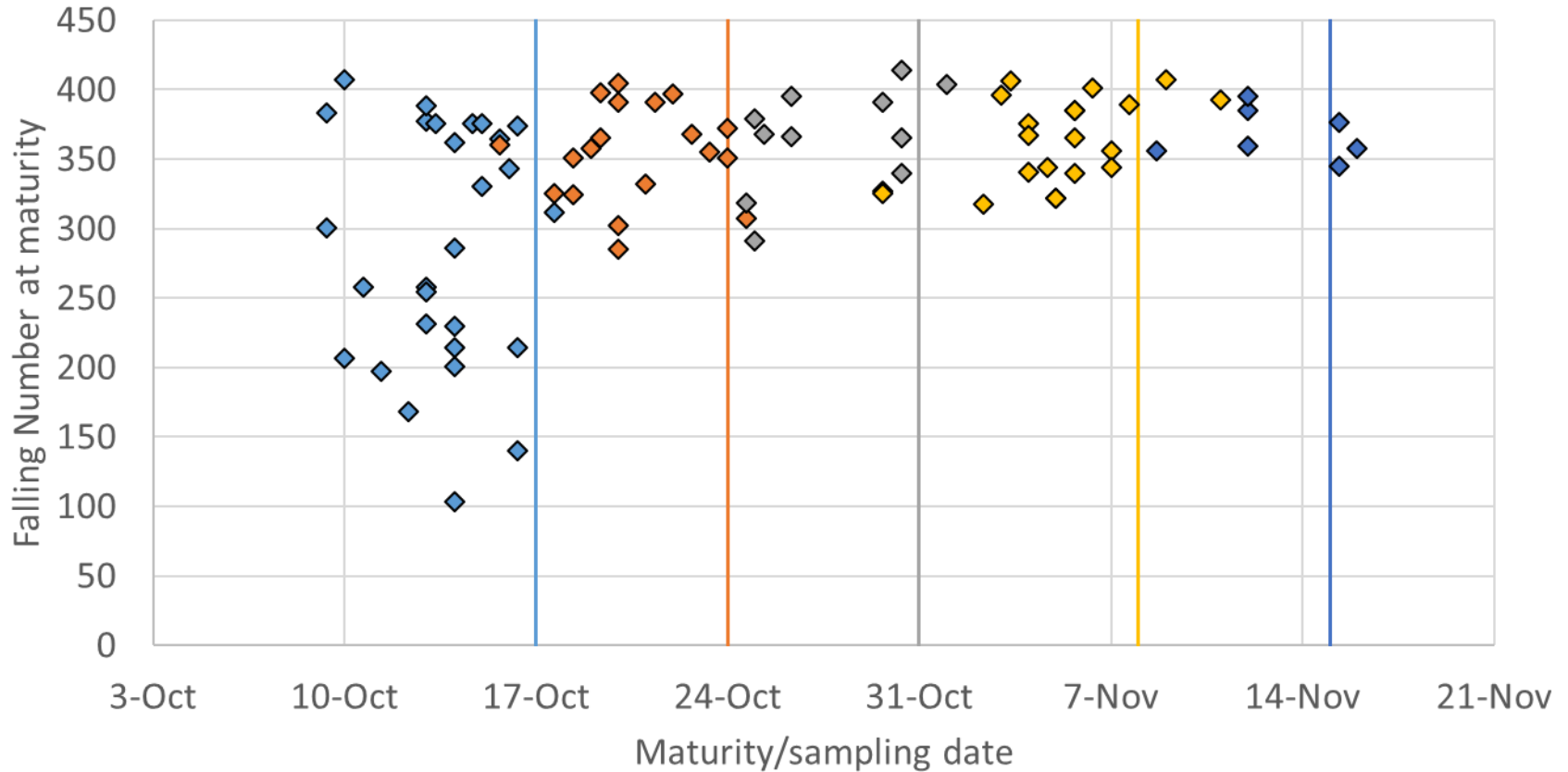
- Use multiple times of sowing to 'line up' timing of maturation between varieties
 - Try to compare within samples of varieties that matured at a similar time and under similar environmental conditions
- Rainfall simulator
 - Consistency between samples
 - Between samples that matured at different times
 - Across seasons
 - Repeatable
 - Allows assessment in dry years

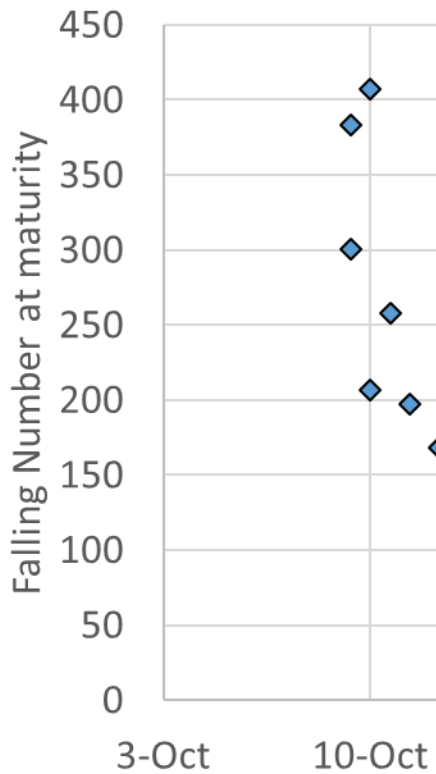




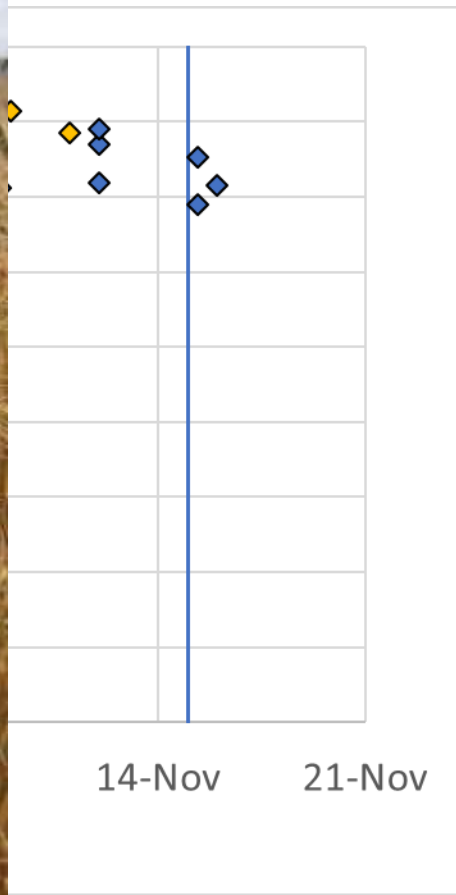


FN sampled at maturity

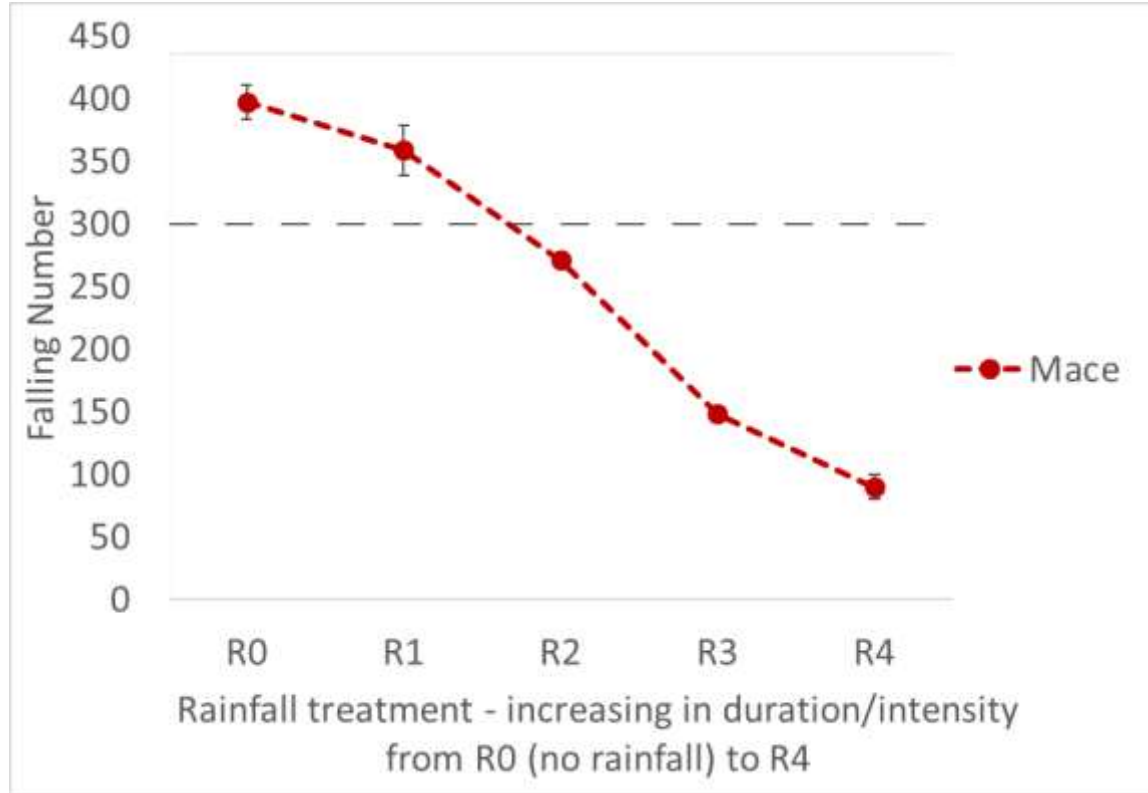




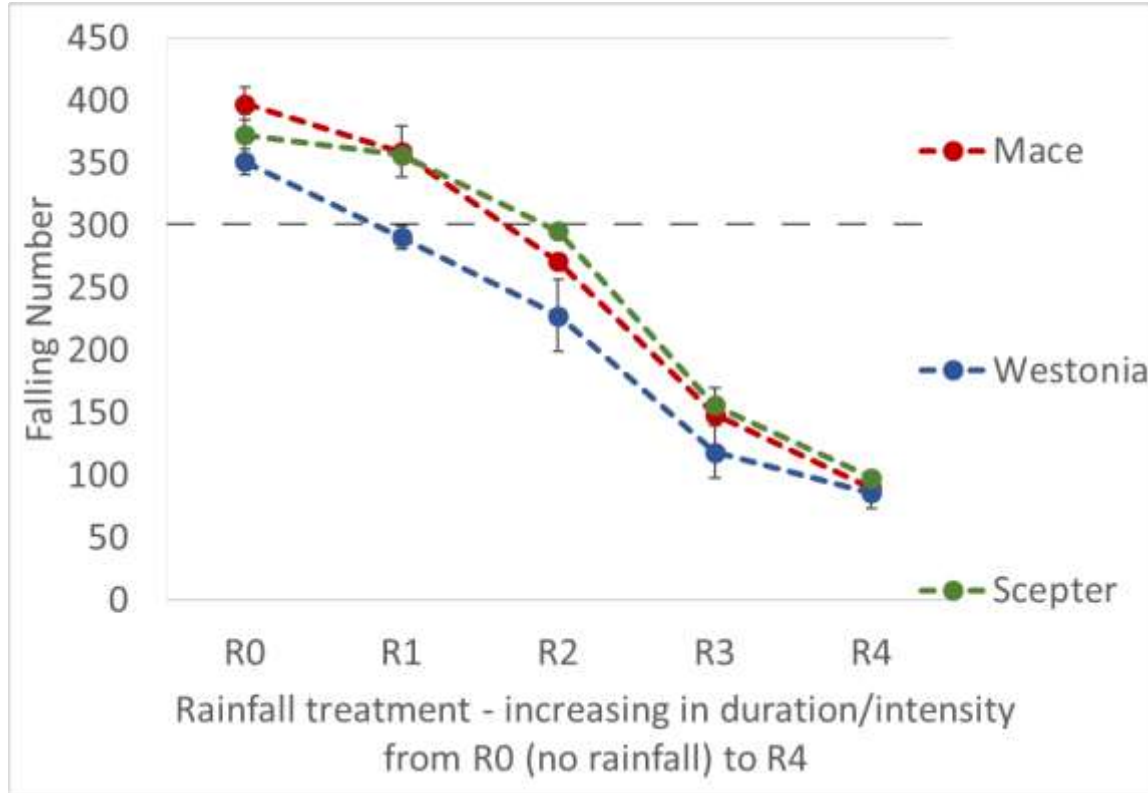
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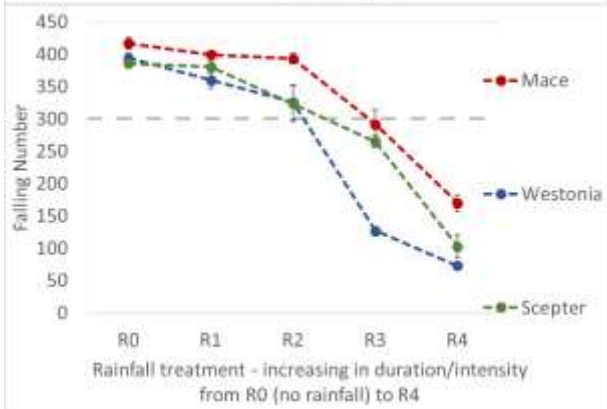
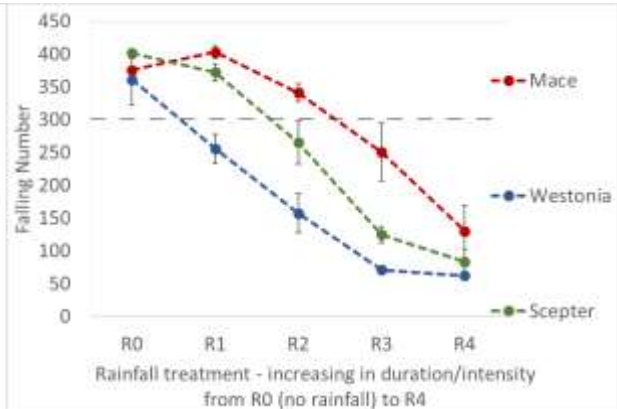
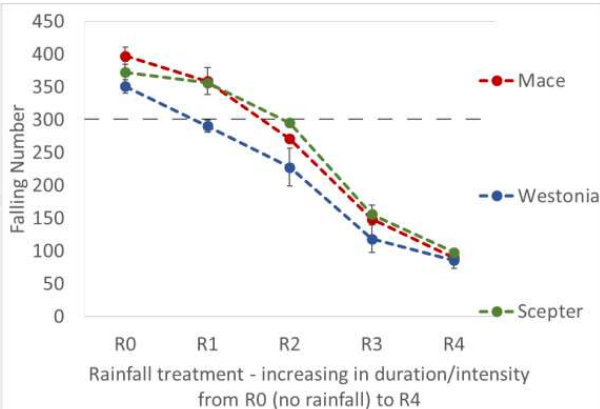
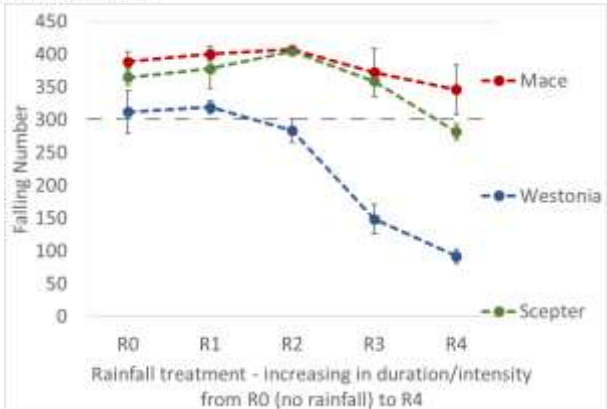
Rainfall simulator results



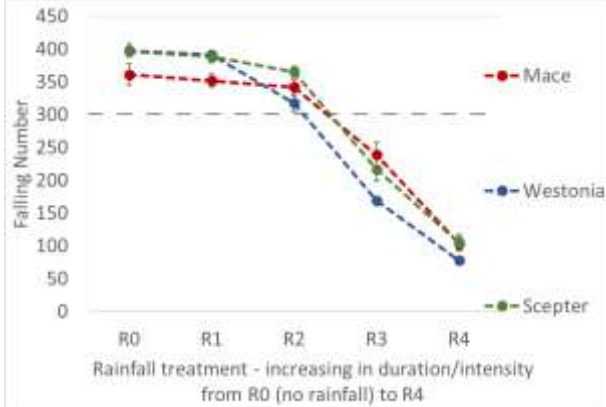
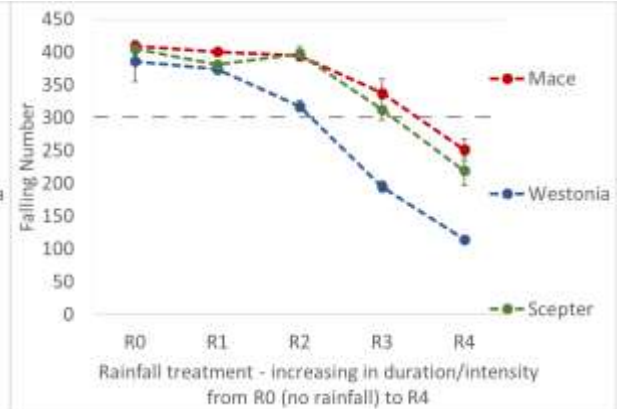
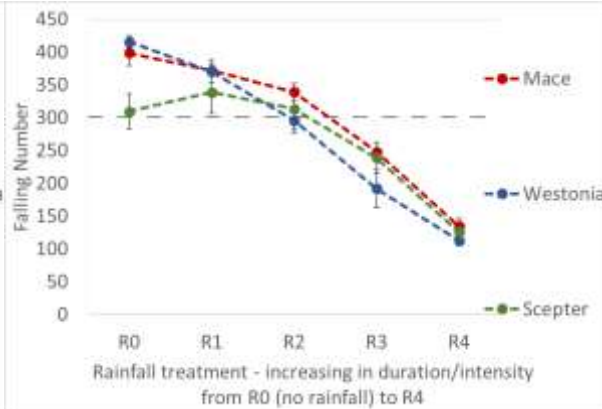
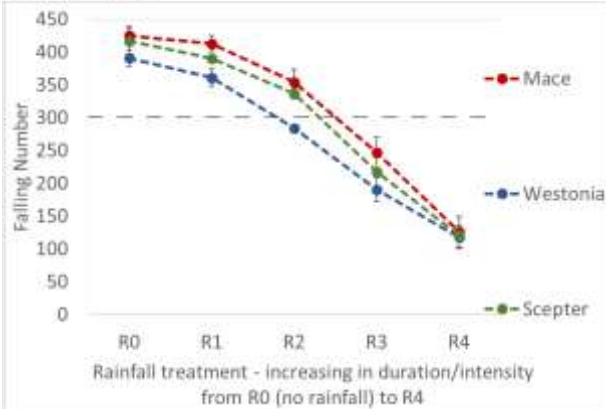
Rainfall simulator results

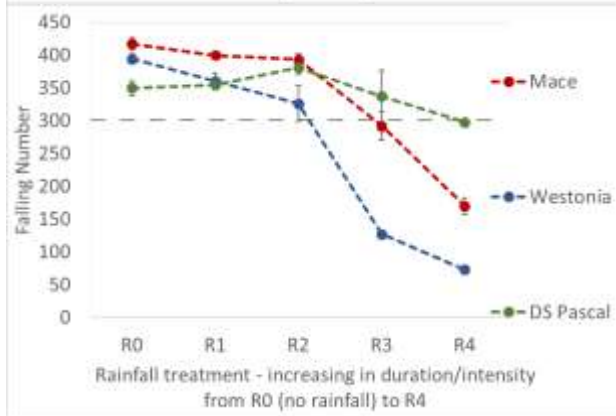
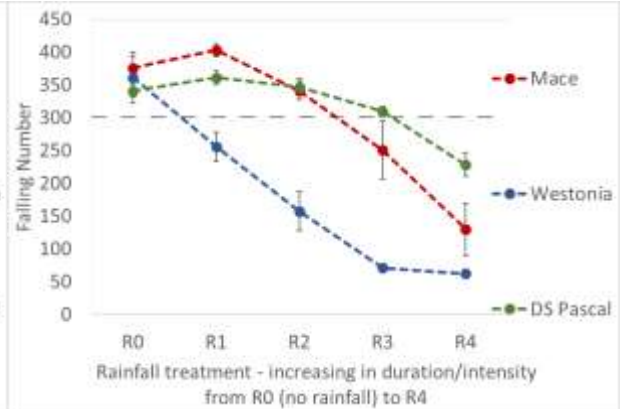
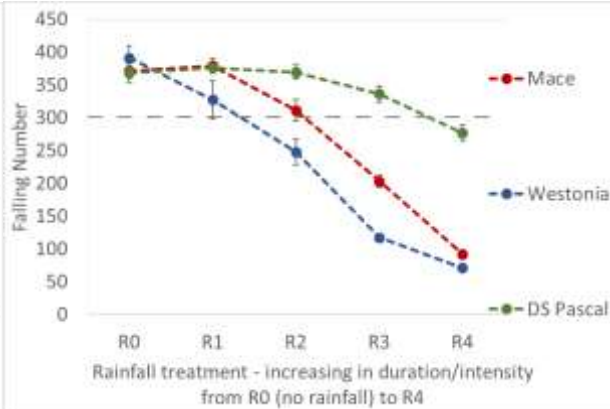
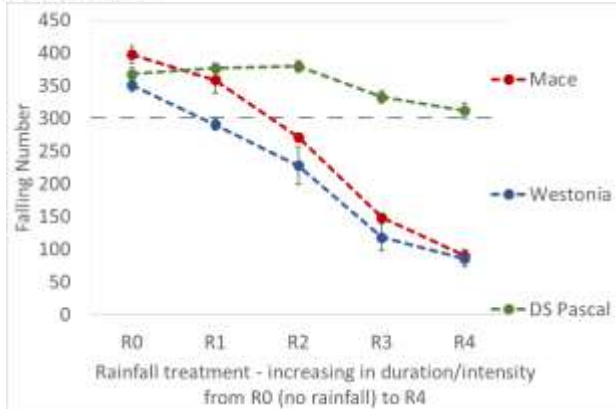


2018 - Scepter

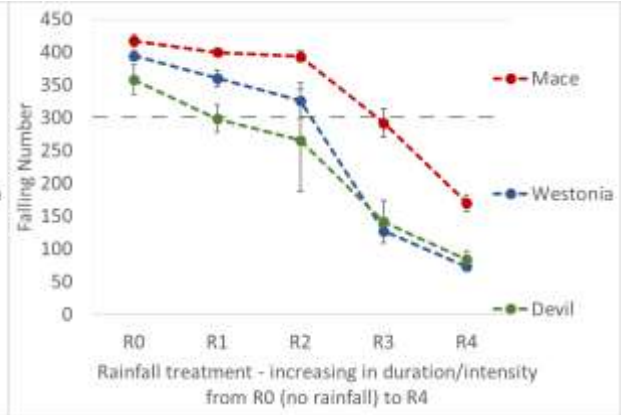
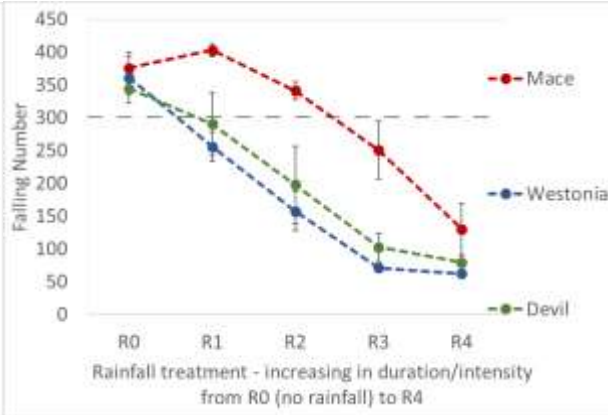
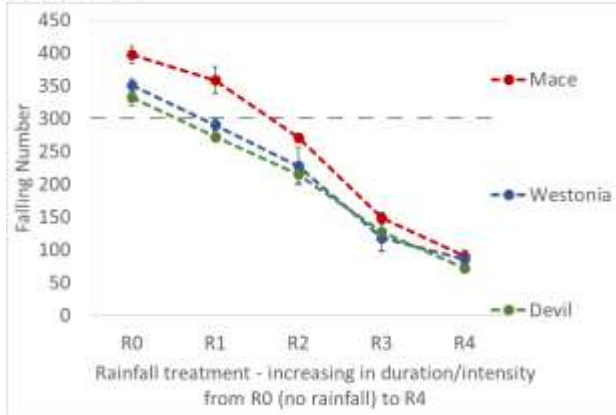


2017 - Scepter





2018 - Devil



Field data

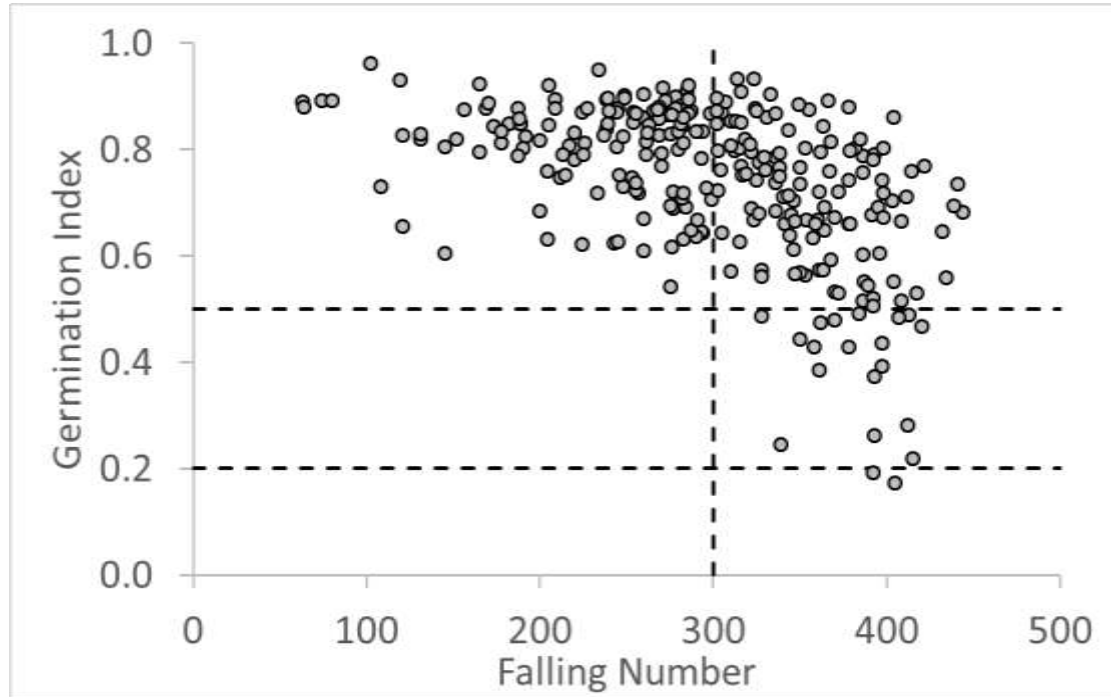
2017

Variety	TOS1	TOS2	TOS3	FNI Rating
LRPB Havoc	262	267	373	3
Westonia	206	208	278	2
Mace	407	401	455	5
Chief CL Plus	293	308	431	4
Ninja	316	312	366	4
Scepter	370	334	419	5
Calingiri	336	331	348	4
Magenta	327	365	424	3
Eagle Rock	369	416	449	6
Kinsei	330	351	355	4p
Yitpi	428	432	442	5
DS Pascal	429	407	454	7
Tungsten		343	367	3p
Cutlass	391	384	404	4
Mean	343	347	398	

2018

Variety	TOS1	TOS2	TOS3	TOS4	FNI Rating
Vixen	180	247	322	319	?
Westonia	86	173	210	309	2
Devil	212	312	296	377	?
Mace	238	342	385	443	5
Scepter	237	287	397	436	5
Chief	96	202	273	457	4
Ninja	182	293	286	384	4
Eagle Rock	418	432	431	452	6
Calingiri	290	324	327	367	4
Magenta	237	345	319	437	3
Trojan	262	276	392	444	5
Kinsei	283	266	363	367	4p
Yitpi	255	311	447	456	5
DS Pascal	342	412	419	413	7
Cutlass	209	267	380	428	4
Tungsten	180	214	360	420	3p
Mean	232	294	351	407	

R2 vs GI



Summary

- Aim: To rate varieties for their susceptibility to pre-harvest sprouting and low FN at harvest.
- Standard methods have limitations
 - Low grain dormancy varieties vary in their PHS susceptibility
 - Maturity differences must be considered when viewing field data
- We use:
 - multiple times of sowing to line up maturation dates of varieties of different maturity length
 - A rainfall simulator to induce PHS
 - In conjunction with GI and field data

Give growers as much information on new varieties as we can, so they can understand risk

Thank you

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Important disclaimer

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