

Barley Fungicide and Plant Growth Regulator Trial

We have trialled the use of the PGRs on barley over the last few years with promising but not necessarily consistent results. 2012 and 2013 saw yield increases, but not 2014, and the yield increases could not be simply explained by reduced lodging. Similarly we have seen increased yield with the use of a fungicide early in the season with no apparent leaf disease. The barley trial was sown with Commander barley (S to scald; MS-S to spot form of net blotch).to examine the effect of the PGR trinexapac-ethyl (Moddus or Marvel) as well as a range of fungicides.

Fungicide	Active Ingredient	Rate
Orius	400 g/l Tebuconazole	290 ml/ha
Prosaro	210 g/l Prothioconazole 210 g/L Tebuconazole	200 ml/ha
Radial	75 g/l Epoxiconazole + 75 g/l Azoxystrobin	420 ml/ha
Tilt Xtra	250 g/L Propiconazole 80 g/l Cyproconazole	250 ml/ha

The fungicides have the registration for the following diseases:

Fungicide	Disease
Orius	Scald Powdery Mildew
Prosaro	Net Form Net Blotch Spot Form Net Blotch Scald Powdery Mildew Leaf Rust
Radial	Net Form Net Blotch Spot Form Net Blotch Scald Powdery Mildew Leaf Rust Eyespot
Tilt Xtra	Net Form Net Blotch Spot Form Net Blotch Scald Powdery Mildew Leaf Rust

The trial was sown on May 26th.

A barley fungicide strategy differs from that for wheat. A large proportion of the yield in wheat is driven by the flag leaf and as a result, the primary fungicide spray is to protect the flag. However barley yield is driven by the two or three leaves below the flag and so fungicides are applied at the Z32-33 (around second to third node stage) to protect the flag – 1 and lower leaves.

All fungicides were applied at second node stage (Z32), with the Tilt Xtra treatment receiving a second application at flag leaf emergence (Z39), done so to continue protecting the whole canopy rather than targeting the flag leaf.

No obvious disease was noted on the plants throughout the season.

The PGR treatments were a one and two spray strategy. The one spray strategy consisted of one application of trinexapac-ethyl (Marvel @ 570 ml/ha) at 2nd node (Z32) stage. The two spray strategy saw an application at 2nd node Marvel @ 570 ml/ha) and again at flag leaf emergence (Z39) (Marvel @ 285 ml/ha). The second spray is applied to stop “bounce back” or where the crop can compensate under good growing conditions for the earlier PGR application and recover to the original height of the unsprayed crop.

The trial received four spring irrigations.

The trial was harvested on November 27th.

Treatment	Yield (t/ha)	Protein %	Retention %	Screenings %	Test Wt kg/hl	Height cm
Marvel @ 32	6.49 ^a	8.5	95.7	1.2	71.4 ^{bc}	68.3 ^c
Prosaro @ 32	6.18 ^{ab}	9.0	96.9	1	72.6 ^{ab}	85.0 ^a
Marvel @32,39	6.17 ^{ab}	9.1	95.9	1.1	72.1 ^{abc}	70.0 ^{bc}
Radial @ 32	5.96 ^{bc}	8.7	96.9	1	72.6 ^{ab}	73.3 ^{bc}
Orius @ 32	5.80 ^{bc}	8.2	97.3	1	71.1 ^{bc}	76.7 ^{abc}
Tilt Xtra @ 32,39	5.69 ^c	8.9	97.5	0.9	73.4 ^a	78.3 ^{ab}
Control	5.58 ^c	8.8	97.1	1	73.1 ^a	75.0 ^{bc}
p	0.007	0.17	0.06	0.67	0.023	0.021
lsd	0.42	NS	NS	NS	1.3	8.68
cv%	4.0				1.0	6.5

Figures with a similar suffix are statistically equivalent. NS = Not Significant - all treatment results are not statistically different.

Marvel and Prosaro did improve yields above that of the control. The Marvel treatments did have the shortest crop height but not statistically different to the control. On the other hand, Prosaro did promote extra crop height.

None of the treatments had any effect on protein, screenings or retention.

Once again, the PGR trinexapac-ethyl has shown to produce a yield benefit, and again for no obvious reason.

The other interesting result was from the Prosaro – increased crop height and yield. The diseases controlled are similar to those controlled by Tilt Xtra so it is unlikely that disease was the result, as even if Prosaro had a longer protective period, disease pressure was minimal. The increased height is also a mystery as Prosaro can be used as a PGR at higher rates.