

Investigating growth regulators and osmoprotectants in wheat

SUMMARY

The aim was to investigate the performance of growth regulators and osmoprotectants to counteract the effects of water stress in plants.

BACKGROUND

Growth regulators reduce the height of crops by reducing the stem length, this has the effect of improving the harvest index (relationship between dry matter and grain produced). Osmoprotectants has been shown to reduce water loss from some crops, this may be beneficial in years with a tight finish.

METHOD

Frame wheat was sown on May 13, with Mallee Mix 1 at 80 kg/ha. The growth regulators Cycocel (chlormequat chloride) and Etherel (ethephon) were applied at two growth stages: Z32 (second node stage) and Z37 (flag leaf just visible). The osmoprotectant Glycine Betaine was also applied at two growth stages: Z37 (flag leaf just visible) and Z60 (head fully emerged). The trial is a demonstration only, treatments were not replicated.

RESULTS

product	rate unit/ha	crop growth stage	yield (t/ha)
<i>growth regulators</i>			
Cycocel	1.3L	Z32	2.30
	1.3L	Z37	2.34
	1.3 and 0.4L	Z32 and Z37	2.30
Etherel	0.5L	Z32	2.34
	0.5L	Z37	2.50
	0.5L and 0.5L	Z32 and Z37	2.39
<i>osmoprotectant</i>			
Glycine betaine	3kg	Z37	2.39
	6kg	Z37	2.41
	3kg	Z60	2.39
	6kg	Z60	2.27

INTERPRETATION

There were no yield penalties or benefits associated with using either a growth regulant or the osmoprotectant. All crops yielded in the range of 2.3 to 2.5 t/ha (including the border plots). It is highly likely that growth regulators work best in environments where crops are sown early and where yield potentials are very high (>5 t/ha) and where lodging can be a problem. Osmoprotectants such as Glycine betaine need to be further investigated in the low rainfall cropping zone.