

New site reveals the parts that count

The Mid North High Rainfall Zone Trial Site was established in early 2006 to meet the needs of producers in areas that receive an annual rainfall of 425mm or more. Growers in this region were particularly keen to establish a site that addressed a range of environmental and production issues that are not experienced at other field trial sites in SA. The site is managed by Jeff Braun and Mick Faulkner of Agrilink Agricultural Consultants.

Located near Tarlee in 2006 with funding from the National Landcare Community Support Program, The Mid North High Rainfall Zone Trial Site aims to provide a location that addresses the following conditions: deep, highly productive soils that are acidic or acidifying but also have areas of sodic and saline soil; winter rainfall that can result in runoff or water logging impinging on catchments and productivity; high crop and pasture productivity potential and consequently high stock carrying capacity; intensive fertiliser regimes and large stubble loads.

In 2006, many visited the site to learn about the 11 trials and demonstrations being carried out. Projects included an evaluation of the decision support tool Yield Prophet, three hay related trials and as well as the work on canopy management of 4 new wheat varieties based on seeding date and nitrogen nutrition (modification of seeding date and rate for four varieties) and barley agronomy.

One experiment aimed to demonstrate the parts of a wheat plant that contribute most to grain yield via photosynthesis. A plot of wheat was sown early at 300 plants/m² and received 90kg/ha of triple super phosphate with the seed. At flowering 72 plants were randomly chosen, all tillers were removed leaving only the main stem. All other plants in the plot were removed. On the remaining plants different parts were covered with black card to prevent sunlight reaching them and so preventing photosynthesis. At harvest grain was weighed and compared to grain yield from plants that were left uncovered.

Plants that were fully covered, that is they could not photosynthesis between flowering and harvest produced 13.6 per cent of the yield of a totally uncovered plant. This yield of the fully covered plant was fuel by stem sugars accumulated prior to cover. As the trial site had sufficient soil moisture after flowering the contribution from photosynthesis was substantial.

The head and stem were found to be the major contributors to photosynthesis for grain filling; however, the leaves were still worth protecting. Exposing the head alone achieved 44 percent of uncovered plant yield. When the lower leaves were covered and the head, stem and flag leaf left uncovered 80 per cent of uncovered yield was achieved. When just the flag leaf was covered yield was 74.5 per cent of the normal uncovered plant yield.. The work found that when light infiltration to the stems increased the stems became more important for photosynthesis. Therefore in actual crops the contribution from stems would be a little lower and that from leaves a little higher than indicated by the trial.

The results from this work provide valuable, locally truthed information for growers when making decisions about cereal fungicide applications and nitrogen nutrition.

All results from the Mid North High Rainfall Zone Trial Site are available by e-mail. Those interested in remaining in regular contact with the activities and outputs from the site should e-mail their details to Mick Faulkner (faulkner@sa.chariot.net.au).