

## Long season barley varieties for high rainfall areas

T.D. Potter, R.D. Wheeler, J.P. Rowe and J. Voigt

Department of Agriculture, P.O. Box 1671, S.A. 5001

Cereal cultivars generally have been bred for the traditional cereal zones and may not be suited to higher rainfall conditions. One means of increasing cereal yields under these conditions might be to grow later maturing cultivars, which would make better use of the longer growing season. Some possible problems associated with this could be rank growth with possible lodging and the increased incidence of foliar diseases. These problems have been shown to be reduced by the use of growth regulants (1) and fungicides (2) but it may be preferable to overcome such problems with genetic rather than chemical solutions (1).

## Methods

A range of barley genotypes, including commercial cultivars and longer season genotypes (B.J. Read - personal communication), was sown between late May and early June at two sites in 1985 and three sites in 1986. Trial design was a randomized complete block with four replications and plot size of 8 rows x 10m long. Barley Leaf Scald (*Rhynchosporium secalis*) scores (0-9), lodging score (1-9) and heading dates were determined where possible and seed yields were measured by machine harvest.

## Results and Discussion

The main conclusions that can be drawn are detailed for seven genotypes in Table 1. The longer season barley genotype (WU- University of Western Australia accessions) headed about two weeks later than the commercial cultivars Galleon, Schooner and Triumph. Barley Leaf Scald scores indicate that the WU genotypes have good resistance to leaf scald compared to the moderately susceptible reaction of Galleon and Schooner and the very susceptible Triumph. WU genotypes lodged less than the commercial cultivars and seed yields were higher (average 15 percent more than Galleon). As Galleon is the highest yielding commercial cultivar in South Australia (R.D. Wheeler -unpublished data) these yield increases indicate that the longer season genotypes could be of benefit in the high rainfall zone particularly as they exhibit good resistance to barley Leaf Scald and lodging. Sowing dates used thus far have been equivalent to or only slightly earlier than local farmer practice. In future earlier sowing dates will be tested to determine the potential of longer season genotypes under as long a growing season as possible.

**Table 1: Mean Barley Leaf Scald score, mean lodging score, heading date and seed yield (t ha<sup>-1</sup>) of some commercial and longer season barley genotypes**

| Genotypes  | Heading<br>date<br>sown<br>(27/5/85) | Mean<br>Scald<br>Score* | Mean<br>Lodging<br>Score+ | Seed Yield t ha <sup>-1</sup> |      |      |      |      | Mean |
|--|--------------------------------------|-------------------------|---------------------------|-------------------------------|------|------|------|------|------|
|  |                                      |                         |                           | Site                          |      |      |      |      |      |
|  |                                      |                         |                           | 1985                          |      | 1986 |      |      |      |
|  |                                      |                         |                           | 1                             | 2    | 1    | 2    | 3    |      |
| Galleon  | 8/10                                 | 4.3                     | 8.0                       | 3.69                          | 3.50 | 5.76 | 3.50 | 4.74 | 4.24 |
| Schooner   | 6/10                                 | 4.0                     | 4.0                       | 2.28                          | 3.20 | 5.30 | 3.74 | 3.60 | 3.62 |
| Triumph  | 10/10                                | 7.6                     | 8.0                       | 3.64                          | 2.72 | 5.54 | 3.44 | 4.09 | 3.88 |
| WU 3072  | 22/10                                | 0.3                     | 1.6                       | 4.08                          | 4.56 | 6.11 | 3.97 | 5.42 | 4.82 |
| WU 3074  | 22/10                                | 0.0                     | 2.3                       | 4.13                          | 4.53 | 6.27 | 4.54 | 5.09 | 4.91 |
| WU 3075  | 22/10                                | 0.0                     | 2.0                       | 4.19                          | 4.19 | 6.13 | 4.64 | 5.36 | 4.90 |
| WU 3077  | 23/10                                | 0.0                     | 2.0                       | 4.33                          | 3.76 | 6.48 | 3.97 | 5.58 | 4.82 |
| LSDs for yield differences (P 0.05)                        |                                      |                         |                           | 1.18                          | 0.97 | 0.64 | 0.71 | 0.67 |      |
| * 0 = nil, 9 = severe; + 1 = erect, 9 - prostrate          |                                      |                         |                           |                               |      |      |      |      |      |
| Site 1 - Struan, Site 2 - Kybybolite, Site 3 - Turretfield |                                      |                         |                           |                               |      |      |      |      |      |

34. Wheeler, R.D. and Nitschke, R.A. 1985. Proc. 3rd Agronomy Conf., p 270