Realization of the potential of triticale

C. H. Castleman

Mallee Research Station, Walpeup, Vic. 3507

In the past decade considerable interest and discussion has been generated by triticale in relation to yield potential, agronomic practices and marketing in Australia. The crop's wide adaptability to diverse soil and climatic environments (1),coupled with varietal resistance to such diseases as stripe rust, leaf and stem rusts, powdery mildew, cereal smuts and cereal cyst nematode (2) should be fully exploited. In less than 10 years of stringent triticale selection, yields equal to or greater than that of local wheat cultivars are being produced by triticales of overseas origin which were not specifically developed for Australian conditions (3). The potential of triticale has not been fully realized because its characters and adaptability have not been fully researched and exploited by agronomists, geneticists and farmers.

Conflicting results on the nutritive value of triticale when fed to livestock have been reported in Australia and overseas. Animal growth has been inhibited in certain instances when triticale has been a major component of the diet (4). Further work is required by nutritionists to define clearly the limiting factors so that plant breeders can devise breeding programs to overcome the problem. The protein quality of triticale is generally superior to that of wheat (Table 1) and of equal nutritive value compared to wheat of similar crude protein (5).

<u>Table 1:</u> Grain yield, crude protein, lysine and threonine in triticale and wheat at different sites in Victoria (Rayner, pers. comm.)

| Site | Grain yield (t/ha) | | Protein (%) Nx 6.25 | | Lysine (g/16 g N) | | Threonine (g/16 g N) | |
|------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| | Tyalla | Wheat* | Tyalla | Wheat* | Tyalla | Wheat* | Tyalla | Wheat* |
| 1 2 3 4 | 4.2 3.3 5.3 3.0 | 4.0 2.4 3.2 2.2 | 13.1 9.1 12.6 15.7 | 13.6 9.4 12.0 14.8 | 3.04 3.62 3.18 2.87 | 2.60 3.13 2.87 2.52 | 3.31 3.57 3.36 3.03 | 3.05 3.26 3.27 2.87 |
| Mean | 4.0 | 3.0 | 12.6 | 12.5 | 3.18 | 2.78 | 3.32 | 3.11 |

^{*} Sites 1 and 2 Condor; 3 and 4 Olympic

Triticale can be successfully grown in the traditional wheat-growing areas and usually competes with wheat in the farm rotation. Preliminary data at Walpeup indicate that wheat sown into wheat or triticale stubbles produced similar yields (1.1 - 1.4 t/ha). However, higher wheat yields (1.4 - 2.3 t/ha) were obtained when wheat was sown into barley, lupin, pea or rapeseed stubbles (6).

Triticale yields could increase to 50 per cent higher than current wheat yields within the next decade if the variation within the *Triticum, Secale* and *Triticosecale* species is utilized (7). Yield, nutritive value and price relative to wheat of triticale are major factors which will determine the future of the crop in Australia.

1. Anon. 1976 CIMMYT Review, 1976 p.61-83.

2. Brouwer, J. B. 1977. Vic. J. of Agric. 75:310-313.

3. Anon. 1978. Res. Proj. Ser. No. 68. Vic. Dept. of Agric. p.23-37.

4. King, R. H. 1980. Proc. Aust. Soc. Anim. Prod. 13:381-384.

5. Farrell, D. J., Chan, C. C., Edey, T. N., and McKenzie, R. J. 1980. Proc. Aust. Soc. Anim. Prod. 13:377-380. 6. Walsgott, D. N., Griffiths, J. B., and Williams, C. M. J. 1982. Australian Field Crops Newsletter (in press).

7. Anon. 1978. CIMMYT Today, 1978 p.1-14.