

IMPROVED VARIETY TESTING AND RELEASE PROCEDURES IN THE AUSTRALIAN GRAINS INDUSTRY

A. Lazenby¹ and S. Till²

¹63 Kitchener St, Hughes, ACT, 2605

²Grains Research & Development Corporation, PO Box E6, Queen Victoria Tce, ACT 2600

Summary. The main recommendations of the review of variety testing and release procedures in the Australian grains industry are presented, together with a summary of the reaction to them by key organisations and individuals in the industry. Steps being taken by the GRDC to implement the recommendations are also described.

INTRODUCTION

The objectives of the Grains Research & Development Corporation (GRDC) include *making more effective use of the resources and skills of the community in general and the scientific community in particular* (1). Currently sectors of the grains industry were undergoing significant changes including reduced funding for plant improvement activities.

The GRDC, in response to previous criticisms of crop improvement efficiency and effectiveness (2), established a committee to review crop improvement in the Australian grains industry. One of its terms of reference was to investigate the current status of variety testing, to recommend protocols and to recommend means of developing integrated national systems for the grains industry (3). However, time constraints prevented any in depth assessment of variety testing and the review team, in its report recommended, amongst other things, *that GRDC establish a working party, chaired by a GRDC nominee, to develop and recommend standardised procedures for the release of publicly bred cultivars, including examination of opportunities for, and benefits of, deregulation. The working party should, as one of its terms of reference, examine the extent to which domination of variety testing of publicly bred varieties by the plant breeders produces undesirable bias.* (3).

The GRDC adopted this recommendation, establishing a Working Party to review variety testing and release procedures, to investigate and evaluate current procedures, to identify desirable outcomes and performance indicators for those outcomes, and to recommend options for variety testing and release. The report was released in November 1994 (4) and key organisations and people in the industry invited to comment. This paper presents the main recommendations, the comments received and the action to be taken by the GRDC in implementation of the recommendations.

DISCUSSION

Recommendations

The main recommendations in the report are listed below:

- **compulsory input** by the relevant sections of industry (grower, marketer, processor/end-user) for which the variety is being selected, into both the objectives of the breeding program and the selection criteria to be used;
- **early and formalised exchange** of elite breeders lines (at about F6 in a typical wheat or barley program);
- **regionally based variety trials**, replacing both the present variety testing programs (VTPs) and interstate variety testing programs (IVTs), with testing undertaken in a small number of defined agro-ecological zones within the three GRDC regions;

- a **maximum number of 15 trials** for major crops in each agro-ecological zone;
- **data** being collected on yield, agronomic characteristics, tolerance to disease, and quality;
- **trial sites being characterised**, thereby enabling the above data to be used both to evaluate varieties under trial and to develop models to predict varietal performance under different conditions;
- **breeders taking over the responsibility for the present Stage 3 trials**, and selecting less than 10 of the best performing varieties per breeding program, including those exchanged as elite breeders lines at about F6, for inclusion in the Stage 4 trials;
- the present system of **replicated plots** 10-20 m in length **being retained** in Stage 4 trials. In addition, in year 2 of these trials, the best 1-3 lines from each breeding program would also be grown **in farmer trials as unreplicated strips** (0.3-1 ha in area);
- the establishment of **three Regional Coordinating Committees**, each with a membership of about 10, the majority being beneficiaries of breeding programs, namely, growers, marketers, processors and other end-users, and including one member of each other Regional VTP Committee;
- **discontinuing the process of Recommendation and replacing it with an Accreditation** of a variety's performance following a testing protocol. The Regional Committees would provide a certified statement of a variety's performance and comprehensive information on such performance would be widely distributed at the time of its Accreditation;
- **variety release and Accreditation as distinct processes**. The Working Party recognised the right of a breeder's organisation to release a variety without Accreditation, together with some information indicating its likely performance, if it has evidence that it is superior to relevant existing varieties;
- **data** on the performance of Accredited varieties would be included in a standard form in a **national database** (complementing information provided as part of the Voluntary Registration Scheme), to which there should be access on a user-pays basis;
- the establishment of a **small Inter-Regional VTP Coordinating Group** (with core membership based on Regional VTP Managers and chaired by a senior GRDC nominee) to develop and monitor both testing protocols in the regions, and the national database;
- **certified seed would be available in sufficient quantity** to meet anticipated demand at the time of the release of a variety, whether Accredited or not, be as widely accessible as possible and available at reasonable price (4).

Reaction to report

The overall response to the report was favourable with many organisations indicating that the review had identified weaknesses perceived in the current testing and release methods. Many organisations endorsed the proposals and requested implementation as quickly as possible. However, others criticised some of the recommendations. All respondents expressed a wish to be consulted during the implementation phase.

Some of the more controversial recommendations were:

- **The early formalised exchange**. Whilst the principle was considered desirable, many respondents believed that the Working Party was suggesting wholesale exchange which would involve unworkably large samples. *However, it was the intention of the Working Party that only a limited number of lines be exchanged, perhaps 20-30, that are likely to perform well in other regions.*

• **The regionally based agro-ecological testing.** Whilst agreeing with this principle the definition and identification of the zones was considered crucial for this to work. At the time of writing the report the number of zones was not identified. *The Working Party deliberately did not attempt to identify the number and recommended a study to determine these be undertaken.* Some expressed concern that Genotype x Environment testing (GxE) was to be abandoned. *This was not the intention of the Working Party which believes that this type of testing can be carried out across the agro-ecological zones once they are identified.*

• **the maximum number of 15 trial sites in each agro-ecological zone.** There were many comments on this recommendation. However most of them arose due to misunderstandings of the intentions of *the Working Party which considered that the gains from greater than 15- 20 sites are minimal and stressed that the sites required for testing may well vary from crop to crop.*

• **The use of unreplicated farmer trials.** Comments from participants questioned the advocacy of such trials, their cost and the effect on seed security, whilst others were supportive of the idea. *The Working Party made the initial recommendation after consultation with public and private breeders who did not express such security problems.*

• **The establishment of three Regional Co-ordinating Committees and inter-regional VTP Coordinating Group** attracted several comments mainly concerned with the structure and size of the groups.

• **Discontinuing Recommendation and replacing it with an Accreditation.** This also attracted some comment. However, provided that it does not restrict people making recommendations and there is adequate testing, it was considered an acceptable recommendation.

Implementation

The GRDC Board was then faced with the task of determining an appropriate implementation strategy. The selection of the Inter-regional and Regional Committees was considered a high priority by the GRDC and key stakeholders. The GRDC Board established a Steering Committee (acting as an interim Inter-regional Committee) to consider the following;

- the structure and composition of the Regional and Inter-regional Committees;
- research requirements and agro-ecological zones within regions;
- the roles of the various bodies for uniform quality testing;
- budget details for implementation and ongoing and future funding;
- the future financial structure, including if it should be funded by industry; and
- the transition process from the existing to the proposed system including, where appropriate, the future role of existing bodies.

The Committee was also asked to assess, negotiate and suggest areas of priority for resolution, and to move towards establishment of the Regional Committees and the drafting of an agreed implementation strategy.

The Steering Committee is Chaired by Dr John Leslie and consists of:

- a representative from the Grains Council of Australia;
- a private sector plant breeder;

- a miller;
- a maltster;
- a representative from the Australian Oilseed Federation;
- a representative from the Australian Wheat Board; and
- two representatives from SCARM (Plant Industry Committee), one for winter and one for summer crops who will represent the public breeders,

with Professor Lazenby as adviser to the Committee.

The GRDC has committed resources from its 1995-96 budget to progress this implementation phase. The Steering Committee is expected to report back to the GRDC Board and advise stakeholders on the strategic implementation of the recommendations by mid 1996.

REFERENCES

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