



THREE-YEAR REVIEW

**EXECUTIVE SUMMARY,
RECOMMENDATIONS AND
ADVISORY BOARD RESPONSE**

MAY 2009



Barley Breeding Australia (BBA) is the coordinator of Australia's national public barley breeding investment, operating a world competitive, cost effective, barley breeding program serving the needs of Australian barley growers, and domestic and international end users.

BBA is an unincorporated joint venture between:

- The Grains Research and Development Corporation
- Department of Employment, Economic Development and Innovation (Queensland)
- NSW Department of Primary Industries
- Department of Primary Industries, Victoria
- The University of Adelaide, and
- Department of Agriculture and Food, Western Australia

Under the terms of the governing Cooperation Agreement, the BBA Advisory Board was required to conduct a review of BBA within three years of the start-up date (July 2006). The review took place in November and December 2008 with the Review Report delivered to the Advisory Board in early 2009.

In accordance with its commitment to ongoing consultation with the barley industry, the Advisory Board is making public the Executive Summary and Recommendations of the Review, the Advisory Board's initial response to the recommendations, and the proposed industry consultation process to enable industry to put its views to the Advisory Board.

EXECUTIVE SUMMARY

REVIEW TERMS OF REFERENCE

1. Based on the pre-review reports commissioned by the Advisory Board, and interviews conducted with each node, assess and report on BBA's progress against the criteria specified in the Cooperation Agreement (and more broadly against the original expectations of the parties);
2. Analyse and comment on the findings of the "Grains Industry Environment Scan" commissioned as input to the Review;
3. Given the Advisory Board's overriding objective to maximise benefit to the barley industry, identify and discuss options for the future operation and structure of barley breeding in Australia beyond the initial 5-year term of BBA; and
4. Recommend to the parties one or more options for the future structure of barley breeding in Australia.

PERFORMANCE OF BBA

In respect to the performance of BBA, the Review Team believes that BBA's most important achievement has been to facilitate the smooth transition from the six breeding programs of the pre-BBA era to three breeding centres linked in a coordinated national effort to breed for the needs of the whole Australian barley industry. The successful widening of the mandate of the breeding programs from a basically regional focus to the national stage has been an important step in preparing the programs for the challenges of the future.

Other significant successes for BBA include development of a close relationship with Barley Australia, the broadening of the Regional Committee network, the removal of barriers to IP sharing and a broadening of the mandate of the nodes thus widening their vision and opening opportunities previously denied them.

BBA has thus been the vehicle for a major reorganisation of barley breeding and a successful transition to a more efficient and effective nationally focused breeding program. That achieved, constraints inherent within an unincorporated joint venture (UJV) structure and uncertainty about the long term future of barley breeding have limited the ability of the parties to adopt further essential change. BBA has thus been a success, but in its present form is judged not to be the most appropriate vehicle for the future.

COMMENT ON THE ENVIRONMENTAL SCAN

In its TOR₂, the Review Team was asked to analyse and comment on the 'Grains Industry Environment Scan' commissioned as input to the Review. The Review Team's detailed responses to this TOR are contained in the body of this report, however, the issues identified and discussed in the Environment Scan suggest that the future environment for all grains, including barley, is one where commercial interests are more dominant and commercial pressures more intense. This has come about primarily because of the accelerating deregulation of grain marketing and consequent intensification of competition across all parts of the barley industry.

A particularly critical consequence is that marketers may be less able to support the market development of new malting barley varieties. At the same time, industry representatives also

emphasised that commercialisation of malting barley could not be separated from market development because of the need to segregate malting varieties within the grain handling system.

The Review Team's conclusion is that the path to market for new varieties may become substantially more difficult in the future unless breeding programs have close and synergistic relationships with a major marketer. An implication is that future organisational structures for barley breeding must facilitate forming such relationships, something UJVs and agencies of government are not necessarily best equipped to do. It is these issues, amongst others that underlie the Review Team's recommendation to move toward a more commercially driven, market based future for barley breeding.

TOO MANY MALTING VARIETIES?

Malting industry respondents to the review praised the high quality of the malting barley varieties recently released into the Australian market, but noted the problems the 'excessive' number of varieties were causing - one respondent suggested to the Review Team that the industry's need was 'better varieties, not so fast'.

Regulating variety releases nationally is recognised as a difficult issue for the barley industry and improved coordination of releases was one of the objectives in establishing BBA. The Review Team see no simple solution to the problem, but make the point that attempts to impose constraints on breeding programs will inevitably slow genetic advance to the ultimate detriment of the whole industry. The mechanism of the market is likely to be the most effective filter: successful varieties will be those that deliver a benefit to end users and are brought to the market in a way that integrates accreditation, market development and grower uptake. In the opinion of the Review Team the current systems of tender used by government agencies (to meet requirements for equal opportunity for all) is not conducive to an integrated approach to marketing - something more likely through commercial relationships between breeding programs and major marketing companies.

A COMMERCIAL FUTURE FOR BARLEY BREEDING

The BBA Advisory Board's most important Term of Reference for the Review was that it define a future for barley breeding that would maximise benefit for the barley industry as a whole.

In responding to this TOR, the Review Team believe that the future for barley breeding lies in continuing the rationalisation process begun in 2006 with the formation of BBA and the establishment of a national approach to barley breeding through ongoing support for three breeding nodes.

To this end, the key recommendations of the review are that:

- Barley breeding should now progress to a more 'commercial' market-based model with, in all probability, two barley breeding entities;
- Breeding for the northern region (northern NSW and Queensland) requires a new strategic approach. A number of options exist, including placing breeding for the region within the mandate of the remaining barley breeding entities, or with another organisation with expertise in crop breeding.

KEY RECOMMENDATION – ADOPTION OF A COMMERCIAL, MARKET-BASED MODEL FOR AUSTRALIAN BARLEY BREEDING

In making the recommendation that barley breeding adopt a commercial, market-based model, the Review Team recognises that commercial viability (the ability to generate a sustainable profit without subsidy from the current owners) is unlikely within the next five years. In consequence, during this critical transition period there will need to be continued investment from the owner and/or GRDC, as the breeding programs reorganise to meet the challenges of the future.

Detailed financial modeling was not possible in the context of the review, but will be an essential task for the owners of the breeding entities.

Before recommending a commercial, market-based model, the Review Team examined two other options – a unitary national breeding program (one line of management with control of all personnel and resources), and a joint venture national breeding program similar to the current BBA. For reasons outlined in the report neither the unitary breeding program nor the joint venture was judged to be in the long-term interest of growers or the upstream barley industry.

KEY RECOMMENDATION - A NEW STRATEGY FOR DELIVERY OF BARLEY BREEDING OUTCOMES IN THE NORTHERN REGION

The second key recommendation is that breeding for the northern region should be strengthened and reorganised. In discussion with the Review Team QDPI&F [now DEEDI] indicated their intention to review their investment in barley R&D within a timeframe set by the current term of BBA, including the possibility of a structured reorientation of its investment in barley toward farming systems issues with a consequent reduction in investment in barley breeding. The Review Team recognised and supported the logic of the QDPI&F position within the context of the emerging National RD&E Reform Framework. However, the Review Team noted the expert technical opinion that the region's barley industry is of such importance, and the environment sufficiently different, that barley breeding in some form must continue within the region. A recommendation is made to this effect.

The recommendation to reorganise breeding for the Northern region is likely to stimulate considerable industry interest and debate. Nevertheless, it represents an opportunity to improve outcomes for both growers and the processing industry. Positives are:

- The opportunity to re-orientate the physical focus of the program to the major production zone in northern NSW, whilst continuing to service southern Queensland;
- The opportunity to re-evaluate priorities and build on the more substantial germplasm, biotechnology and skills bases of a larger breeding program or programs.

Careful planning and wide communication will be required by all parties in the progression of this decision.

END.

REVIEW RECOMMENDATIONS

RECOMMENDATION 1:

THAT THE PRESENT BBA JOINT VENTURE NOT CONTINUE BEYOND ITS 'INITIAL TERM' (TO JUNE 2011) AND THAT AUSTRALIAN BARLEY BREEDING THEN TRANSITION TO A COMMERCIAL, MARKET-BASED MODEL SIMILAR TO THAT NOW OPERATING FOR WHEAT BREEDING

REVIEW TEAM RATIONALE:

Based on the grains industry environment trends, financial modeling and discussion with the parties, the Review Team recommends a commercial, market-based model as the future for barley breeding. Deregulation is creating a more complex, more competitive environment where commercial imperatives will be more important. Barley breeding, as a part of the barley value creation chain, cannot stand apart from this change.

The Review Team notes that all state governments have chosen to exit wheat breeding¹ and to place their previous wheat breeding activities in a commercial context. The NSW, Victorian and South Australian State Governments also ceased barley breeding with the formation of BBA in 2006.

By 'transition to a commercial, market-based model' we mean that the breeding programs will benefit in an environment where the rules, disciplines and opportunities are those applicable to the private sector economy. We do not mean an immediate cessation of institutional or GRDC funding. Financial modeling shows that none of the current nodes, in their current configuration, could achieve commercial viability before 2012-13 and in this circumstance, continuing investment by the owners will be required. This does not invalidate the recommendation to move to a commercial model, in fact, it strengthens it, as a restructure of breeding program operations will be essential and has proven difficult to achieve in the present environment.

This recommendation is made without access to rigorous financial modeling or detailed business cases, both will be required to support the recommendation going forward. Should these detailed studies indicate that viability cannot be achieved, even in the medium term, the recommendation would need to be reviewed. We believe, however, this is unlikely.

BBA ADVISORY BOARD RESPONSE

The Advisory Board accepts the underlying thrust of this recommendation that, in the industry's long-term interest, barley breeding must continue to move toward an operating model that is commercially driven and based on sound commercial principles.

In the Board's opinion, however, neither the preliminary modeling undertaken as part of the review nor the subsequent analysis by the nodes unambiguously supports the immediate transition to a commercial model. Compared to wheat, barley has lower levels of adoption of varieties carrying EPR, lower levels of EPR collection and higher indicative year-to-year

¹ NSW retains a durum wheat breeding program.

variability in revenue. Combined, these suggest a high level of risk for industry in any immediate transition to a full commercial model.

Given the above, the Advisory Board will recommend to the BBA parties that the BBA Cooperation Agreement governing current barley breeding arrangements continue to its full term (June 2011). Further, from July 2011, the Board recommends that barley breeding enter a transition period of up to five years by which time the Board anticipates that barley breeding would be operating in a fully commercial mode similar to wheat breeding. The Board anticipates that the transition phase will require a continuing, but yet to be determined, industry and government investment in barley breeding

To support this approach, the Board foreshadows a change in its role to one with greater focus on assisting the parties in their individual and collaborative efforts to introduce more efficient and commercially driven practices that can improve the efficiency and sustainability of barley breeding.

RECOMMENDATION 2

THAT CONSIDERATION SHOULD BE GIVEN TO INTEGRATION OF BARLEY BREEDING WITH WHEAT BREEDING (OR OTHER SIGNIFICANT COMMERCIAL ENTITY IN THE BARLEY VALUE CHAIN)

REVIEW TEAM RATIONALE:

Convincing arguments were put to the Review Team that integration of barley and wheat breeding would be in the best long-term interests of the barley industry. Financial modeling undertaken as part of the review indicates that stand-alone barley breeding is not commercially viable in the immediate future with current cost structures. Aligning barley and wheat breeding greatly improves the commercial prospects for barley through cost reductions and efficiency gains from areas such as economies of scale, improved access to technology from international partners, critical mass of science, commercialization synergies etc.

BBA ADVISORY BOARD RESPONSE

The Advisory Board accepts this recommendation, whilst noting differing views may exist between the parties. In advocating a more commercially driven approach to barley breeding, the Board believes that commercial principles will ultimately decide whether barley breeding continues in a stand-alone form or becomes part of a larger, more diversified entity.

RECOMMENDATION 3

THE PARTIES TO THE BBA COOPERATION AGREEMENT CONSIDER NEGOTIATING A TERMINATION DATE FOR THE CURRENT BBA JOINT VENTURE OF NO LATER THAN 30TH JUNE 2010.

REVIEW TEAM RATIONALE:

The current arrangement (the BBA unincorporated JV) has been successful in assisting the transition from six breeding centres to three whilst maintaining national coverage of barley breeding. Each of the three remaining owners, however, has indicated their desire to enter alternative arrangements. In this circumstance, continuing the JV unnecessarily will only defer change to a new model for barley breeding.

The Review Team acknowledges the significant support for the current model from both industry and growers, and attribute this support to the positive aspects of BBA, in particular the strong relationship with Barley Australia and the development of the Regional Councils as an effective consultative mechanisms.

BBA ADVISORY BOARD RESPONSE

The Advisory Board rejects this recommendation on the grounds explained in the Board's response to Recommendation 1.

RECOMMENDATION 4

THE BBA ADVISORY BOARD ACTIVELY MANAGE THE TRANSITION PROCESS TO ENSURE THAT IT IS ORDERLY AND EQUITABLE, AND THAT IT PRESERVES THE RIGHTS AND IP POSITIONS OF EACH OF THE PARTIES AND CONTINUES TO DELIVER VARIETIES TO GROWERS

REVIEW TEAM RATIONALE:

The transition proposed – from collaborative joint venture to market-based breeding programs – will require careful management to safeguard the rights of all parties to the current Cooperation Agreement. The disposition of germplasm shared under the current agreement is a particularly critical issue and may require immediate action to preserve the IP positions of each node. This, and other actions needed to transition from the current agreement are the responsibility of the Advisory Board.

BBA ADVISORY BOARD RESPONSE

The Advisory Board accepts their responsibility to act in the interests of both the parties and the Australian barley industry, and will continue to actively support the development of barley breeding in consultation with owners, growers, Barley Australia and other industry partners.

RECOMMENDATION 5

THAT NEW, MORE COMMERCIALY-BASED ARRANGEMENTS BE CONSIDERED FOR BARLEY VARIETY DEVELOPMENT FOR THE NORTHERN REGION.

REVIEW TEAM RATIONALE:

In its response to the developing Primary Industry Standing Committee (PISC) sponsored National RD&E Framework, QDPI&F (now DEEDI) have placed barley in the 'Link' category and flagged to the Review Team their desire to review their investment in barley R&D. Possible outcomes of such review include a structured reduction in investment in barley breeding [by QDPI&F], whilst still continuing to contribute to the national barley RE&E effort in its mandate area.

Financial modeling shows that the scale of production in the northern region is, and is likely to remain, too small to support stand-alone commercial barley breeding. It is likely, however, that breeding undertaken for the region as part of a larger breeding program may be viable. In this circumstance continued short to medium term public investment is justified.

BBA ADVISORY BOARD RESPONSE

The Advisory Board agrees that a new strategy will be needed to meet the legitimate, long-term barley improvement needs of the Northern Region and is committed to working to implement a sustainable solution. The Board notes the commitment given by Queensland to BBA and to the current breeding project, but critical to the future is clarification of the future role and level of investment by Queensland.

The Board remains committed to supporting sustainable variety development for the region and will work with all interested parties to this end.

RECOMMENDATION 6

BUSINESS PLANS DEVELOPED BY THE CONTINUING BREEDING ENTITIES SHOULD INCLUDE PROVISION FOR COLLABORATION ON PRE-COMPETITIVE AND 'INDUSTRY GOOD' ISSUES, INCLUDING LINKAGES TO EMERGING SCIENCE AND TECHNOLOGY, PRE-BREEDING R&D, DISEASE AND AGRONOMIC BENCHMARKS ETC.

REVIEW TEAM RATIONALE:

Breeding program collaboration on pre-competitive issues predates BBA and this should be encouraged to continue. The Review Team notes that a review on linkages between public pre-breeding and private breeding has been completed recently. This report was not available to the Review Team, but, once public, the argument and recommendation of the report will inform the development of barley breeding's future plans.

The issue of how to ensure ongoing education and training in plant breeding in a commercial environment was raised with the Review Team. Whilst acknowledging that it may become more difficult, the Review Team were made aware of the current input to education and training by AGT personnel and also noted the recent establishment of the Centre for Plant Breeding Education at The University of Western Australia.

BBA ADVISORY BOARD RESPONSE

The Advisory Board supports this recommendation.

RECOMMENDATION 7:

THAT THE GRDC DEVELOPS BENCHMARKS FOR BARLEY VARIETY AGRONOMIC PERFORMANCE AND A PROCESS FOR 'AGRONOMIC ACCREDITATION' OF BREEDING LINES PRIOR TO THEIR SUBMISSION FOR MBIBTC ACCREDITATION.

REVIEW TEAM RATIONALE:

The suite of barley varieties released since 2002 have largely addressed malting quality deficiencies and have re-established a world competitive if not world leading position for the Australian malting and malt barley export industries. Supply constraints and associated agronomic and disease deficiencies of current varieties were identified as a serious industry weakness by both growers and the malting industry. Breeders are aware of these issues and are moving to address them. However, establishment of regional benchmarks for disease and agronomic characters, and a system of accreditation similar

to, but preceding the Malting Barley Industry Barley Technical Committee (MBIBTC) quality accreditation managed by Barley Australia are recommended.

BBA ADVISORY BOARD RESPONSE

The Advisory Board understands the rationale for this recommendation, but believes that existing industry consultation mechanisms (Regional Barley Advisory Committees, Barley Australia etc) and increasing commercial imperatives to release only truly meritorious varieties will meet this need.

RECOMMENDATION 8:

THAT THE GRDC TAKE AN ACTIVE ROLE IN THE TRANSITION FROM THE BARLEY BREEDING AUSTRALIA JOINT VENTURE TO THE NEW BARLEY BREEDING ARRANGEMENTS.

REVIEW TEAM RATIONALE:

As an investor of both government and grower funds, and the only organisation with a national investment mandate, GRDC has a unique and critical role in managing the transition from the current arrangements to whatever new arrangement is ultimately decided by the current owners of barley breeding programs. A well considered and constructive approach to managing any transition will be essential for all three existing breeding programs, but especially for the Northern Region where the impact of change may be greatest and most visible.

BBA ADVISORY BOARD RESPONSE

The Advisory Board supports this recommendation.

END.

COMMUNICATION PLAN

Barley Breeding Australia has committed to consultation with growers and the barley industry before any decisions are made on the basis of the review recommendations.

Consultation will be primarily through BBA's established communication mechanisms with growers and industry and will include:

- Making the Review's Executive Summary and Recommendations (and the Advisory Board's response) available to Barley Australia; and subsequent consultation with Barley Australia.
- Making the Review's Executive Summary and Recommendations (and the Advisory Board's response) available to the Regional Advisory Committees (NRBAC, SEBAC, SABAC and the WMBC) and accepting feedback from the Advisory Committees.
- Making the Review's Executive Summary and Recommendations (and the Advisory Board's response) available to all individual respondents to the Review
- Placing the Review's Executive Summary and Recommendations (and the Advisory Board's response) in the public domain by advertising its availability in a Press Release and placing the document on the BBA web site.
- Calling for and accepting comment on the recommendations up to the 30th July 2009.

END