Partnering with the Australian cherry industry: a responsive and participatory extension approach

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Abstract

RD&E has shifted from Australian government to private sector providers over the last few decades. This requires new approaches to public and private partnerships. A four-year program was designed that identified relevant expertise, whether grower, consultant, researcher or international expert, and relevant grower topics presented by annual 'road show' campaigns. Growers were surveyed on the design and effectiveness of the program. Growers indicated that small regional groups work best, but they need to be assisted by advisors and researchers. Growers also indicated they should have the ability to be self-directed. Growers want on-farm field days and informal and formal information sessions. Results show that multiple research and extension methods are required to deliver a broad range of priority information to a diverse range of growers and regions. Almost all of the 308 growers (62% of the total industry) who were surveyed indicated they would participate in a future national development program. This program has enabled information flow between growers, consultants/advisors and researchers which facilitated the adoption of new ideas and technology.

Keywords: grower communities, industry development, participatory program, regional

INTRODUCTION

In 2016, approximately 485 Australian cherry growers produced 17,443 t with an estimated value of AU$ 130,000 million. With industry expansion, production will rise beyond 20,000 t by 2020. In 2015-2016 season, Australia exported 5,589 t of cherries valued at AU$ 76.05 million with 52% of the exports from Tasmania, 22% from Victoria, 18% from New South Wales, 6% from South Australia and 2% from Western Australia and Queensland (Fresh Intelligence Consulting, 2016; ABS, 2017; CGA, 2017; FAOSTAT, 2017).

The resilience of Australian agriculture systems appears to be declining due to a slowing in innovation, a loss in capabilities and the capacity to reduce climatic and economic shocks (Hunt et al., 2014). There is a need to ensure the delivery of sound agronomic and technology improvements to growers to guarantee the Australian cherry industry remains environmentally and economically viable. A nationally funded program to assist Australian cherry industry growers to be globally competitive commenced in July 2013 under a National Cherry Development Program (NCDP) coordinated by the Tasmanian Institute of Agriculture (TIA) at the University of Tasmania (UTAS). The aim of the NCDP was to partner with the Australian cherry growers to build a resilient cherry industry that is sustainable and profitable. In Australia, traditional extension practice was 'top down technology transfer' (Black, 2000). This is sometimes referred to as a diffusion model (Rogers, 1983) that focuses on farmers who are early adopters of new technology. During the 1980s and 1990s new extension methodologies, distinct from the top down model, were developed. These were based on a 'participatory, bottom up approach' (Black, 2000). This methodology emphasises empowerment of the growers. The objective of this paper was to determine how effective the extension method used by the NCDP program was in delivering information that satisfied the needs of growers.

MATERIALS AND METHODS

NCDP extension approach

The approach used by the NCDP is a combination of technologies and practices. Cherry growers communicate their priority issues to regional reference committee members. These reference members raise grower issues via group teleconference meetings. Reference committee consultation sessions analyse these issues into highly relevant topics to address via roadshows. The NCDP coordinator organises government agencies, extension officers, researchers, agribusiness, industry stakeholders, growers and international experts as guest speakers to provided research findings that answer these topics at NCDP road show events. The NCDP uses different technologies (paper-based handouts, presentations, memory sticks, web sites, etc.,) to deliver information via formal and informal structured information sessions, including training workshops, field walks and in-field discussion sessions.

Analysis of effectiveness of the program from a grower perspective

A survey was used to understand the effectiveness of the NCDP methodology. Growers who participated in the NCDP, reviewed the program using voluntary questionnaires in 2014 and 2016. The questionnaires were peer reviewed by four TIA staff, an international researcher and private consultant and adjusted before distribution. A series of 13 questions were asked at each review consisting of open ended, ordinal scale (1 to 10, with 1 being "least agree" and 10 "most agree") and multiple choice (yes, no options) questions. The questionnaires did not ask or obtain any personal or identifying information. Data were collected from respondents who wished to fill in a question of the questionnaire distributed at each review. Only industry registered cherry grower responses were analysed.

Results of the questionnaires were analysed by calculating percentage or determining the average from the ordinal scale replies by respondents. For the 2016 questionnaires, associations between questions were analysed using the Somers' D statistic (Somers, 1962). The Somers' D statistic quantifies the degree of association between two ordinal variables. All calculations were done using proc FREQ in SAS version 9.3.

RESULTS

Grower responses from mid-term questionnaire

Of the 122 attendees who attended the 2014 road show event, 61% of grower respondents returned questionnaires for analysis. Growers indicated the highlight of the road show event were the in-field talk and walk sessions and substantial benefits were obtained during these discussions due to the content presented. In addition, growers wanted new information to assist them with enhancing their problem solving skills. Growers indicated difficulties in interpreting research findings and how to practically apply these findings into their enterprises. They wanted to receive simple, instructive information that can be readily applied to meet their business operations. Approximately 65% of respondents suggested a need for practical oriented presenters covering a variety of topics on orchard management practices. Approximately 99% of respondents pointed out they had learned highly relevant and new information at the NCDP road show events. The top four responses from growers for future road show topics were pruning, irrigation, nutrition, and cultivar information (Figure 1).

Grower responses from end-of-project questionnaire

Over 181 participants attended the 2016 road show event held across four states and five locations, from which 70 registered cherry grower questionnaires were received for evaluation. Approximately 84% of growers indicated the NCDP ranked from 7 to 10 as highly important and approximately 64% of respondents ranked their level of satisfaction with the NCDP from 7 to 10. Analysis showed a positive association between the satisfaction level of growers and the importance of the NCDP to the cherry industry (Figure 2). Also, as grower satisfaction levels increased, they regarded the NCDP as having greater importance for

industry (Somers' D value 0.3638, P=0.0018) (Figure 2).

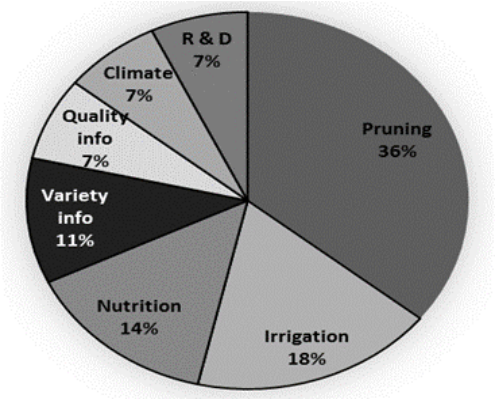

Figure 1. Grower suggestions for future NCDP topics based on 2014 data.

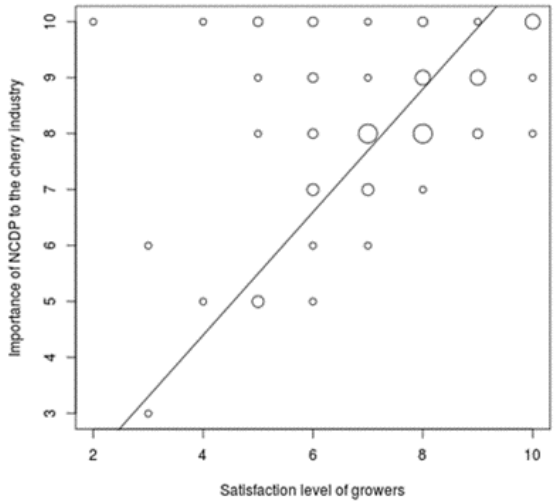

Figure 2. The satisfaction level of growers and the importance of the NCDP to the cherry industry. Somers' D=0.3638, P=0.0018. Symbol size is in proportion to the number of observations from 2016 data.

Approximately 62% of respondents indicated that they had changed on farm practices due to knowledge obtained from the NCDP and 94% of cherry industry growers indicated they would participate in a similar program in the future. As growers changed on farm practices due to NCDP their satisfaction level increased by 1.564 times. There was a considerable degree of positive association between new knowledge and benefits received from the NCDP and grower satisfaction levels (Somers' D value 0.6011, P<0.001 value) (Figure 3). Similarly, there was some degree of positive association between NCDP usefulness and advantage obtained by the cherry growers business enterprises and grower satisfaction levels (Somers' D value 0.3881, P=0.001 value) (Figure 4).

DISCUSSION AND CONCLUSIONS

The 144 grower comments were highly variable across five states and seven different regions. In 2014, grower responses and comments indicated a need for management practices (pruning 36% and irrigation 18%) (Figure 1). The severe drought conditions in the 2015-2016 growing season probably influenced grower responses and comments on the effects of climate on cultivars, pollination, fruit set and yield. The participatory bottom-up

approach of the NCDP program was extremely successful in achieving it objectives as in 2014 approximately 99% of growers indicated they had learnt highly relevant new information and in 2016, 62% of growers reported changed on farm practices due to knowledge obtained from the NCDP. While the reported adoption rate of new technology from this project is high (62%) a 37% difference between learning new information (99%) and actually implementing new practice on farm (62%) is an indicator for improvement. This is indicative of the growers' comments on interpreting research findings and applying these into their enterprises. This indicates a need to improve growers problem solving skills, a need for presenters to better engage in Q&A and to communicate on how to apply research findings in practice to enable grower uptake. The association between clear, highly applicable knowledge transfer and grower satisfaction levels (Figure 3) indicates how effective the NCDP is in assisting and working with small regional groups. The satisfaction levels of growers (Figure 2) and usefulness and advantage (Figure 4) of the NCDP for growers show that multiple research and extension methods are required to deliver a broad range of priority information to a diverse range of growers and regions.

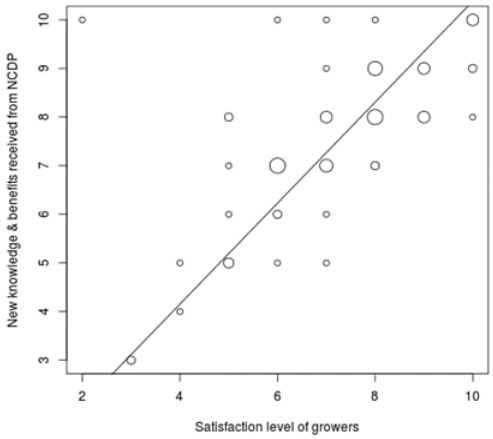

Figure 3. The association between new knowledge and benefits received from the NCDP and grower satisfaction levels. Somers' D=0.6011, P<0.001. Symbol size is in proportion to the number of observations from 2016 data.

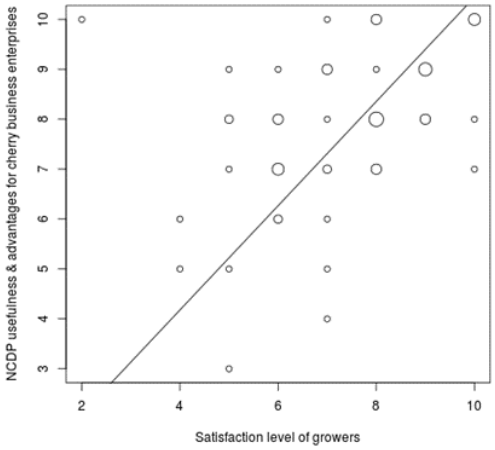

Figure 4. The usefulness and advantage for the cherry industry and satisfaction levels of growers. Somers' D=0.3881, P=0.001. Symbol size is in proportion to the number of observations from 2016 data.

Growers realised information obtained through research programs and extension practices is critical to their success. This study has confirmed that a combination of different technologies, research and extension practices are needed to support Australian cherry growers. The processes used by this highly successful NCDP has enabled Australian cherry growers to be focused on solving local issues through a partnership program such as the NCDP. Further development and adaptation of this approach is needed to improve the effectiveness of (mostly researcher) communication on the application of research findings.

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