A survey on Estimated Breeding Values in the pork industry

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Background

The Australian pork industry has gone through many changes in the last 20 years, which has lead to producers becoming more competitive or leaving the industry. This has lead to EBV seminars to educate pork producers in the understanding and use of EBV selection of replacement stock. However, there has been no research done to assess the awareness or understanding of EBVs among producers. EBVs are a valuable tool in which the industry can take advantage of to improve the genetics and annual turnover of their herd.

The current status of the pork industry has put more pressure on farmers to become more competitive or to leave the industry. The drought has put pressure on producers because of high feed costs resulting in low returns on domestic pork. At the same time producers have to deal with cheap imports coming into the country and capping the market, restricting the price which producers are receiving. Particularly now producers have to contend with the Free Trade Agreement with the possibility of more pork coming into the country and the lowering of the Quarantine Standards which may let exotic diseases into the country. The effect of this pressure and low feed prices has meant that farmers have to find ways to become more internationally competitive to stay in the industry, and EBVs are a tool which can assist in this.

The basis of this project was to discover the awareness, understanding and use of EBVs by producers in NSW, SA and QLD. Producers were also surveyed as to what form of communication they would prefer for the extension of EBVs.

Procedure

A direct mail survey was used to survey pork producers in NSW, SA and QLD (see Appendix) with help from the NSW DPI, PIRSA, QLD DPI&F, APL and AGBU. A mail out survey was used for several reasons: to gain information from a wide population; to ensure privacy; to prevent bias from the interviewer; to gain a high response rate; and to guarantee cost effectiveness.

The survey was made up of primary closed-ended questions for ease of response and to ensure that respondents are less likely to misinterpret the questions (Dillon 1993). When designing this survey the nature and degree of the verbal description and the number of variables to cover all producers' circumstances were taken into account.

Some of the survey questions were scaled to get the respondents feelings about a variety of points. Interval-scale data allowed us to tell where the respondents' priorities lie in respect to the questions asked (Dillon 1993).

The limited numbers of open-ended questions were designed to develop a wide range of responses to selected questions.

A total of 540 producers were randomly selected with 180 from each state. The total response rate was 13.1% with 59 of these valid for use. There are around 400 commercial producers in NSW, over 300 in SA and around 600 in QLD. Therefore, in NSW and SA surveys were sent out to approximately half the pig producer population, and approximately one third of QLD.

A cover letter introduced the project, advised who was conducting it and, most importantly, how it would benefit the producers in the long term if they completed the survey.

SPSS, Student Version 12.0 for Windows, a statistical software program was used to analyse the data from the survey.

Results

1. Demographics of respondents

Out of the 59 respondents, 53 were 'owner-managers', 5 'managers' and 1 'owners'. The response rate varied between states with 21 coming from NSW, 31 from SA and 7 from QLD.

Herd Sizes varied from 1 to 7,000 sows (Figure 1). This indicated that the majority of respondents had small herds with less than 100 sows (n=24) and 100-200 sows (n=16).

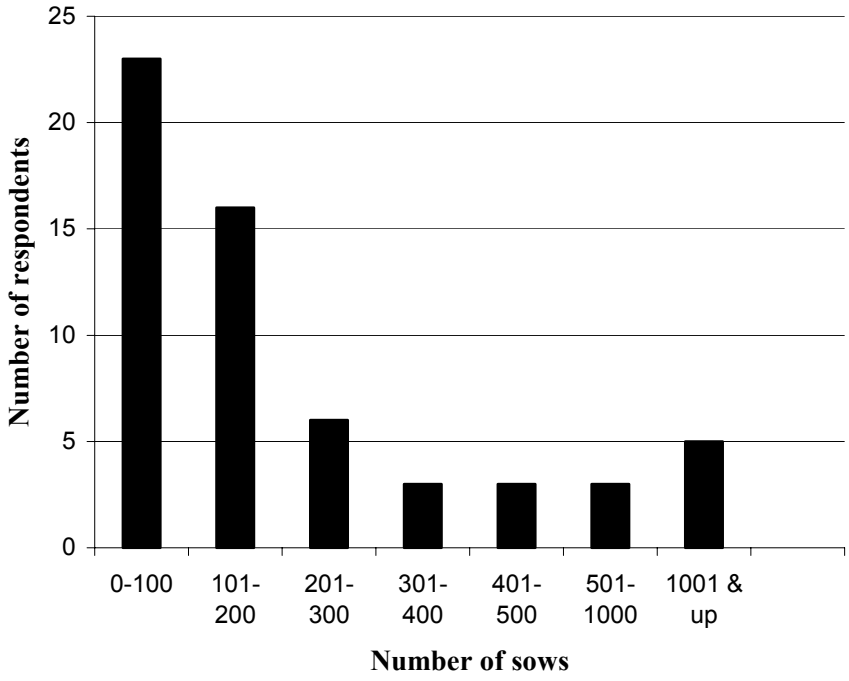

Figure 1. Sow herd size of survey respondents.

The number of pigs slaughtered per week corresponded to herd sizes. More than half of the respondents (40/59=65.9%) had a sow herd size between 0-200, and slaughtered between 0-100 pigs per week. The primary market that the majority of respondents (47/59=79.7%) were targeting the Bacon (65-90kg) market. Those that targeted their product to the Pork market were predominately (8/59=13.6%) from the smaller herds (1-100 sows) and slaughtered less pigs (<40 slaughtered/wk).

The most preferred breed, which makes up majority of the respondents herd was 'Commercial Crossbreeds' (n=37) then followed by 'Large White' (n=16).

The majority (n=47) of respondents indicated that they had not attended any seminars on EBVs in the last three years.

2. Use of AI by respondents

About a third (22/59=37.3%) of respondents are not using AI. The other producers use it to a varying degree (Figure 2).

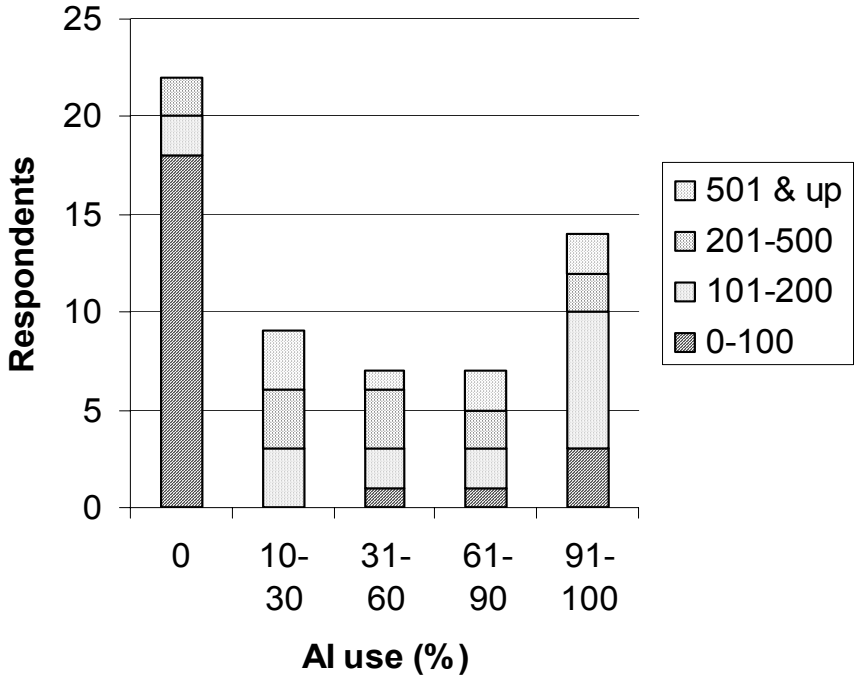

Figure 2. The number of respondents using AI (%) for each sow herd size.

Of the 59 respondents, 22 of these chose not to use AI and the majority of these are with a herd size from 0-100. Of the 37 respondents who do use AI, only a small proportion of these (n=14) used it between 91-100%, and the majority of these (7/16=43.8%) had sow herd sizes of 101-200 sows. All respondents with herds of over 501 sows used AI to some degree.

3. Breeding or buying replacement stock

Less than 20% (n=11) of respondents bred their own replacement boars compared to the 33 respondents who bred their own replacement gilts (Table 1). There were 8 and 9 respondents who both bred and bought in boars and gilts respectively.

Table 1. Number of respondents who breed their own and/or buy replacement boars or gilts.

Breed pigs	Boars	Gilts
Yes	11	33
No	40	17
Both breed and buy	8	9

4. The importance of the selection of traits

Respondents indicated that out of the traits shown below (Table 2), 'growth rate' was most often ranked as the 'most important' trait (34/59=57.6%), closely followed by 'P2' (30/59=50.8%).

Table 2. The importance of *each* trait to respondents (each trait considered separately).

Rank (%)	Growth Rate	P2	Feed Conversion Efficiency	Structural Soundness	Litter Size
Most Important	57.6	50.8	47.4	37.3	35.6
Important	27.1	35.6	35.6	44.0	42.4
Neutral	8.5	8.5	6.8	5.1	15.2
Unimportant	1.7	1.7	1.7	1.7	1.7
Extremely unimportant	1.7	1.7	3.4	5.1	3.4
Missing	3.4	1.7	5.1	6.8	1.7
Total	100	100	100	100	100

5. Seedstock suppliers

There was a relationship between the purchase of semen, boars and gilts and the respondents' seedstock suppliers. There were 40 respondents who purchased boars from seedstock suppliers, 37 respondents who purchased semen and 26 respondents who purchased gilts.

Out of the respondents who purchased from seedstock suppliers and:

- Who bought boars (40) and/or semen (37), 26 used the same seedstock supplier.
- Who bought gilts (26) and/or semen (37), 23 used the same seedstock suppliers.
- Who bought boars (40) and/or gilts (26), 18 used the same seedstock suppliers.

6. Advice providers and producers understanding and use of EBVs

This question was not answered correctly by many of the respondents; many ranked only first and second preference.

Table 3. The importance (by ranking) of different sources for advice on EBVs.

Rank	Seedstock	Consultant	Department of Agriculture	Myself
Most Important	23	3	0	21
Important	8	6	2	7
Neutral	5	4	5	2
Unimportant	2	4	7	0
Extremely Unimportant	0	0	3	0
Missing	21	42	42	29
Total	**59**	**59**	**59**	**59**

Of the respondents who use their seedstock suppliers, 23 indicated that they find their seedstock suppliers advice 'most important' (Table 3). Very few (2) stated that the advice from the suppliers was 'unimportant'. The use of a consultant was considered 'most important' or 'important' by 9 respondents when seeking advice. Many respondents (n=28) relied on themselves when seeking advice on EBVs.

Table 4. Seedstock suppliers providing advice and respondents understanding and use of EBVs.

	Respondents Situation on EBVs					
Seed Stock Supplier Advice	**Heard of EBVs but do not know how to use them**	**Know of EBVs but choose not to use them**	**Rely on seedstock suppliers to choose EBVs**	**Myself and seedstock supplier choose the EBVs**	**I alone choose the EBVs to be used**	**Total**
Most Important	1	2	16	2	2	**23**
Important	0	1	1	3	3	**8**
Neutral	2	0	1	1	0	**4**
Unimportant	0	1	1	0	0	**2**
Total	**3**	**4**	**19**	**6**	**5**	**37**

It was evident in Table 4 that the respondents who state that their seedstock supplier are 'most important' for EBV advice, also rely on their seedstock suppliers to choose animals based on EBVs (n=16). There were also 8 respondents who indicated that their seedstock suppliers are 'important' for advice, but majority of these also indicated that they were the primary decision maker in the use of EBVs.

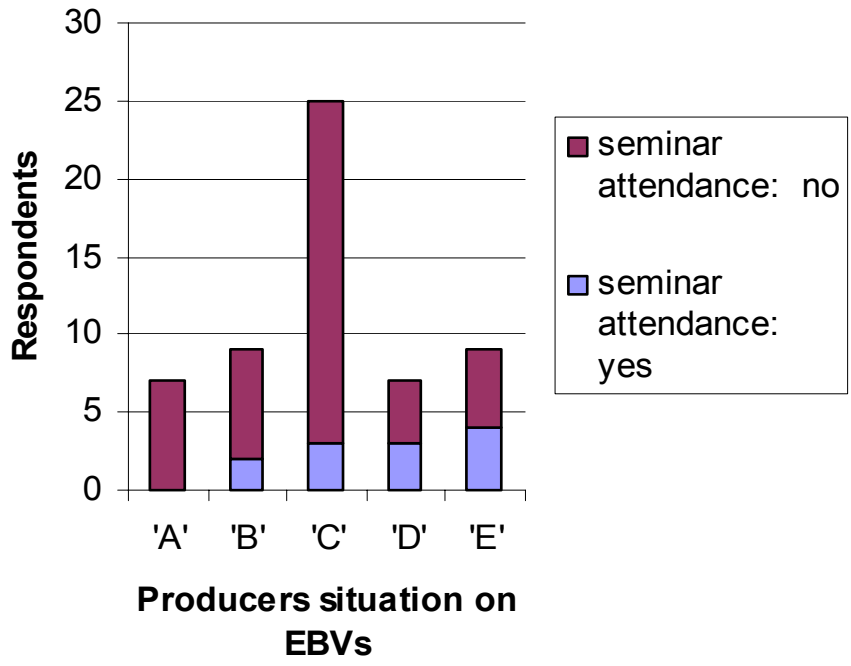

Figure 3. Respondents understanding and use of EBVs

Legend: 'A'= Heard of EBVs but do not know how to use them; 'B'= Know of EBVs but choose not to use them; 'C'= Rely on seedstock suppliers to choose EBVs; 'D'= Myself and seedstock supplier choose the EBVs; 'E'= I alone choose the EBVs to be used.

Figure 3 shows that the majority (n=25) of respondents indicated that they 'rely on their seedstock suppliers to choose their EBVs'. There is an equal number (9) of respondents who 'know of EBVs but choose not to use them' and producers who 'alone choose the EBVs to be used'. There is also an equal number of respondents (7) who have 'heard of EBVs but do not know how to use them' and who 'selected their EBVs along with their seedstock suppliers'.

None of the respondents in category A (n=7/7) had attended any seminars on EBVs in the last 3 years. The majority of respondents in classes 2-5 (n_B=7/9, n_C=22/25, n_D=4/7 and n_E=5/9) had also not attended seminars. Therefore, 75.6% of respondents who used EBVs had not attended seminars.

7. Preferred form of communication

Forms of communication found to be most popular were 'educational classes' (n=17) and were closely followed by 'written material', with 15 respondents indicating that this is what they preferred (Table 5).

Table 5. Respondents preferred form of communication.

Form of Communication	Respondents
Educational Classes	17
Written Material	15
Consultants	2
Industry Days	3
Electronic Communication	3
Industry Bodies	4
Missing	15
Total	**59**

Discussion

1. Adoption of AI

The results from this survey indicated that 62.7% of respondents used AI from 10-100%. However, an APL survey in 2001 (Geogy, 2001) found that only 20% of Australian pork respondents were using AI. This may indicate a trend of increasing adoption of AI. However, the adoption of AI in the smaller herds has had a relatively slow uptake with only 5% using AI.

2. Adoption of new technology

It has been observed that there is a lag period of around 4 years in the adoption of new technology (MPW Australia, 1990). AI was first widely used (introduced in 1970s) in the pork industry in Australia in the 1980s but it took around 21 years for many producers to adopt AI to any significant level. The results show that the use of AI did not have an influence over the choice of breeding or buying in replacement stock.

3. Influences on the use of EBVs

The results indicate that the majority of respondents use some form of EBV selection when purchasing semen or replacement stock. However, seminar attendance in the last three years was low in all states.

The majority of respondents had not attended any EBV seminars in the last 3 years but had selected stock using EBVs. This may be because most respondents are relying on their suppliers to select their stock using EBVs so may not find the need to know about EBV selection.

It is obvious that respondents find their seedstock suppliers a valuable resource in respect to the genetics in their herd. Even though it is evident that respondents rely on their suppliers, a question to be asked is, do the producers know how to choose stock using EBVs and if they did, would they start to choose the EBVs themselves? Do the

respondents know the EBVs being selected for their herds and if so do they receive the records on each pig or semen which is purchased?

4. Training

One of the aims of this project was to discover which form of training was preferred when introducing new technology. The results indicated that 'educational classes' and 'written material' were most popular.

This suggests that training would be most effective if followed up with written material. If seminars and written material are used together it would allow the producers to attend the seminars but have written material to take home and refer to later.

Emergent Findings

1. There was a low proportion of respondents who had attended EBV seminars in the past 3 years in NSW, SA and QLD.

2. Respondents were aware of EBVs and a majority of respondents used these for selection with the advice of their seedstock suppliers.

3. All traits stated were of importance to respondents regardless of farm size or industry experience.

4. The most popular form of communication was educational classes, closely followed by written material from pork journals and newsletters.

5. Respondents preferred to breed replacement gilts, but buy boars and semen.

6. Use of AI in this survey was higher than previously reported (APL) in 2001.

Recommendations

1. Further assess pork producers' knowledge of EBVs.

2. Determine whether producers understand or want to know how to select stock using EBVs.

3. Assess how suppliers and producers are working together in the selection of stock using EBVs.

4. Develop workshops tailored for producers to encourage understanding and use of EBVs.

5. Find a way to work with seedstock suppliers to encourage pork producers to use EBV selection.

6. Assess producers' awareness and knowledge of EBVs before and after they attend the EBV seminar.

By assessing producer's understanding of EBVs and how they are selecting these with their seedstock suppliers assists in developing programs tailored to producers. Developing tailored workshops and finding a way to work with suppliers will increase the adoption rate of producer-selected EBVs.

Successful EBV seminars have been conducted in other industries, such as the beef industry, with positive outcomes (Taurus Technology, 2000). Investigating what made them successful will help in designing new pork producer workshops. Feedback from EBV seminars will allow educators to assess whether or not the seminars are successful and are a valuable tool to help modify workshops for the producer's best interest.

Acknowledgements

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Appendix: Estimated Breeding Values are estimates of the genetic potential of pigs, which are used to improve productivity of your herd.

Q1. What is your role? (Please tick appropriate response)

□ Owner and Manager □ Manager□ Other

Q2. Which state are you from?

□ NSW .....□ SA…… □ QLD

Q3. Nearest Town to Property .....

Q4. Number of Sows .....

Q5. Number of slaughter pigs sold per week

□ 39 or less □ 40-50 □ 51-100 □ 101–200 □ 201–500 □ 501 or over

Q6. Which breed makes up the majority of your herd? (Please tick one)

□ Large White □ Landrace □ Commercial Crossbreeds .... □ Other

Q7. What percentage of your weekly matings would be AI? .....

Q8. From which seed stock supplier/breeding company do you get your semen?

.....

Q9. Rate all of the following traits, which you see as importance in breeding into your herd.

(Circle 1=Most important 2 =Important 3=Neutral 4=Unimportant 5= Extremely Unimportant)

□ Carcase Fat (P2) 1 2 3 4 5 □ Feed Conversion Efficiency 1 2 3 4 5

□ Growth Rate 1 2 3 4 5 □ Structural Soundness 1 2 3 4 5

□ Litter Size 1 2 3 4 5 □ Other 1 2 3 4 5

Q10. Please indicate your primary target market? (Tick one only)

□ Pork (64Kg or less) □ Bacon (65-90Kg) □ Export Market (91Kg or over)

Q11. Do you breed your own replacement boars and gilts?

Boars □ Yes □ No **Gilts** □ Yes □ No

Q12. From which seed stock supplier/breeding company do you get your boars?

.....

Q13. Which category below best fits the above seed stock supplier/breeding company?

(If more than one supplier, please number in priority from 1-3. One (1) being the most preferred.)

□ Commercial Suppliers (Eg, Cefn, Hyfarm-Neuendorf, members of the NPIP, PIC)

□ Local Supplier (Other Farmers)

□ Other .....

Q14. From which seed stock supplier/breeding company do you get your gilts?

.....

Q15. Which category below best fits the above seed stock supplier/breeding company?

(If more than one supplier, please number in priority from 1-3. One (1) being the most preferred.)

□ Commercial Suppliers (Eg, Cefn, Hyfarm-Neuendorf, members of the NPIP, PIC)

□ Local Supplier (Other Farmers)

□ Other.....

Q16. Who provides EBV advice for selection of boars and semen?

(Rank in order from 1 being the most important to 5 being least important)

..... Breeding Company

..... Consultant

..... State Department Agriculture

..... Yourself

..... Other.....

Q17. Tick ONE only of the following statements, which is closest to your situation.

□ I have heard of EBVs but do not know how to use them

□ I know of EBVs but choose not to use them

□ I rely on my seed stock supplier/breeding company to choose my EBVs

□ I choose the EBVs in collaboration with the seed stock supplier/breeding company to be used

□ I alone choose the EBVs to be used.

Q18. Have you attended any EBV seminars in the last 3 years?

□ Yes □ No

Q19. How many years have you been in the pork industry?

□ 0-5yrs □ 5-10yrs □ 10-15yrs □ 15-20yrs □ 20 more yrs

Q20. How would you prefer to gain new knowledge about new technologies in the pork industry?

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Thankyou for participating in this survey. Thankyou, Nicole Nielsen.