

### Australian Dairy Herd Improvement Scheme

澳洲乳牛群性能改良計畫

Empowering and networking of dairy farming in Australia  
澳洲乳牛飼養的賦權與聯網

Taiwan, May 2016

Daniel Abernethy



### National Statistics (國家統計)

- Total Dairy Farms (乳牛場總數)  
6,128
- Total Dairy Cows (泌乳牛總數)  
1.74 million(百萬)
- Average Herd Size:(平均牛群大小)  
202 cows (頭)



資料來源(Source: Dairy Australia and ADHIS, 2015)



~15~

### Industry Stats (產業現況)

- Breeds(乳牛品種)
  - 78% Holstein(荷蘭牛)
  - 12% Jersey (娟珊牛)
  - 5% H/J Cross (荷蘭/娟珊雜交牛)
  - 5% Other (其他)
- Milk Production in higher rainfall areas(在降雨量較多的區域生產牛乳)
  - 64% Milk production in state of Victoria(64%的牛乳在維多利亞州生產)



### Holstein Production – Pastures Based Industry 荷蘭牛的生產-以放牧為主的乳業

- Average Herd Recorded Holstein Production 2015  
(2015年荷蘭牛之平均牛群紀錄資料)
- Volume(產乳量) 7,494 litres(公升)
- Protein(蛋白質) 244 kg @ 3.26%
- Fat(脂肪) 288 kg @ 3.85%
- Lactation Length(泌乳期) 331 days



資料來源(Source ADHIS 2015)



## Empowering Dairy Farming (賦權乳牛飼養)

Improving Dairy Herds through decisions based on data (依據資料做決策改良牛群性能)

- Better Science (更好的科學)
- Better Breeding Values (更好的育種價)
- Better Tools (更好的工具)
- Breeding Decisions made easy (使育種決策更容易)

Success through data driven decisions (透過數據驅動做決策而成功)



## Better Science: What's their real efficiency? (更好的科學：乳牛的真正效率為何?)



A

6890 litres/year (公升/年)  
600 kg liveweight (活體重)  
20 kg DM/d of feed (乾物質/每天飼料)



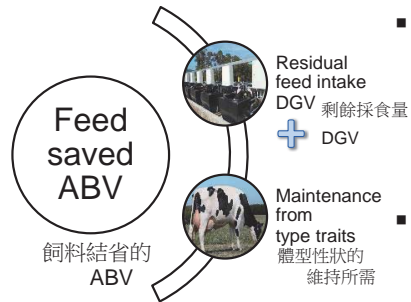
B

6890 litres/year (公升/年)  
600 kg liveweight (活體重)  
19 kg DM/d of feed (乾物質/每天飼料)

Cow B is more efficient than cow A (B牛比A牛更有效率)  
1 kg/d at \$0.3/kgDM is worth \$110/cow/year (1 kg/天 美元 \$0.3/kg乾物質 美元\$110/頭/年)

~16~

## Better Science: Construction of Feed Saved ABV (更好的科學：建構飼料結省的澳洲育種價ABV)

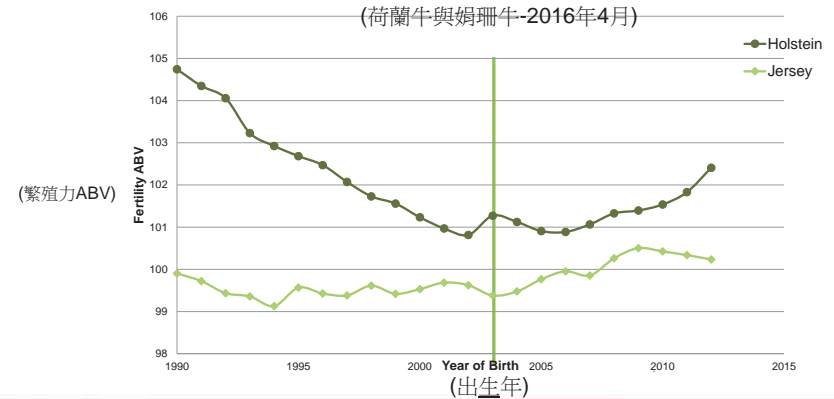


- Holsteins – Residual Feed Intake plus maintenance (荷蘭牛-剩餘採食量加上維持量)
- Other breeds – maintenance requirements (其他品種-維持需求)

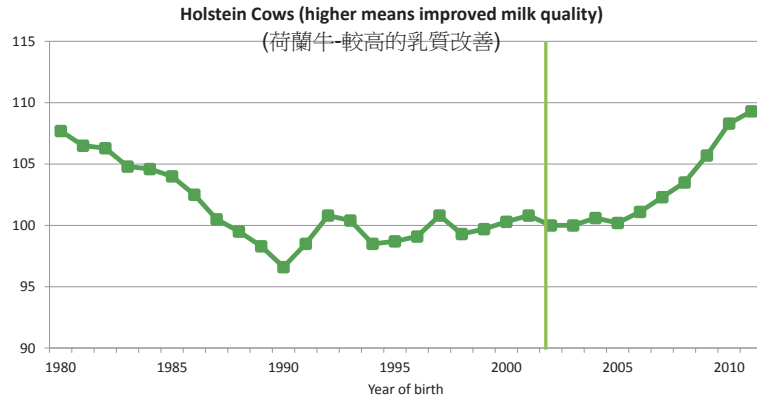
## Better Breeding Values: Genetic Gain - Fertility (更好的育種價：遺傳改進-繁殖力)

Holstein and Jersey cows (April 2016)

(荷蘭牛與娟珊牛-2016年4月)



## Better Breeding Values: Genetic Gain – Mastitis Resistance (更好的育種價：遺傳改進-乳房炎抗性)



## Better Tools: Farmer Input into NBO review (更好的工具：酪農投入國家育種目標調查NBO)



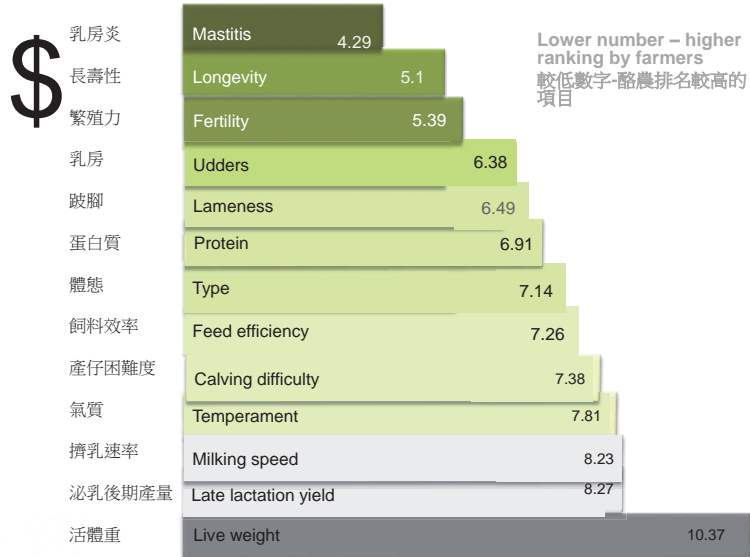
National Breeding Objective Survey



1000 Minds™

- Farm walk event(牧場散步活動)
- 26 events on 46 farms throughout Australia(整個澳洲有26個活動在46個牧場舉行)
- >600 participants(參加者>600)
- >600 farmer and service provider responses collected through;  
(>600 酪農及服務供應商透過以下方式收集回應)
  - Random phone calls(隨機電話訪談)
  - Volunteer participation(志工參與)

~17~



## Australian Indices. 澳洲指數 Tailor made for Australian farmers. 為澳洲酪農量身訂製

When breeding cows are you most interested in. 配種時最感興趣的項目...

A balance of production, type and health traits to deliver maximum profit?  
生產、體態及健康性狀的平衡以獲得最高利潤?  
Your Index is...

Traits like fertility, mastitis resistance, feed saved and longevity?  
繁殖力、乳房炎抗性、飼料節省及長壽性?  
Your Index is...

Overall type and mammary system?  
所有體態與乳房系統?  
Your Index is...

**Balanced Performance Index** 平衡表現指數  
 Production 乳產量  
 Fertility 繁殖力  
 Type 體態

**Health Weighted Index** 健康加權指數  
 Fertility 繁殖力  
 Less Mastitis 較少乳房炎  
 Improved Longevity 改善長壽性

**Type Weighted Index** 體態加權指數  
 Overall type 總體態  
 Improved udders 改善乳房  
 Production 乳產量





~18~

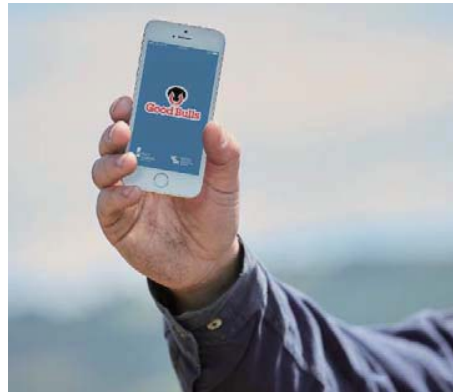
## Better Tools: Putting the power of herd improvement in the palm of your hand

更好的工具:牛群改進的力量在您的手掌上

One set of numbers to compare all bulls available for purchase in Australia (一組號碼即可比較在澳洲買得到精液的種公牛資料)

Over 20,000 bulls stored on the app, no need for internet (應用應用程式儲存超過20,000頭種公牛資料, 無需上網即可查詢)

Updated with the latest Breeding Values with every proof release (更新每一筆經過證明公布的最新育種價)



## Better Tools 更好的工具

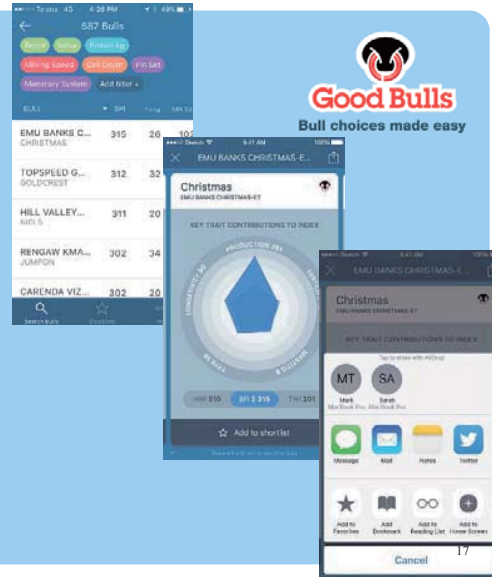
Search Bulls based on; 公牛的搜尋

- Breed 品種
- Total Merit Index (總收益指數)
  - Balanced Performance Index (BPI) 平衡表現指數
  - Health Weighted Index (HWI) 健康加權指數
  - Type Weighted Index (TWI) 體型加權指數
- Set up to 50 Filters 建立最多50個篩選標準
- Make it easy for farmers to find the bulls that suit their breeding objective 讓酪農容易找到適合他育種目標的公牛



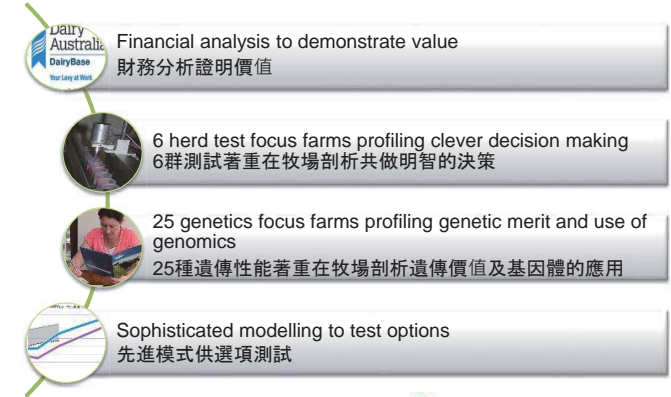
## Better Tools 更好的工具

- Sort & re-sort on any filter 任何篩選標準的分類與再分類
- Remove or adjust filters one at a time 一次移除或調整一個篩選標準
- Click on any bull to see detailed ABV information 點選任何公牛即可看到詳細的澳洲育種價訊息
- Export individual bull cards and shortlists 輸出個別公牛卡及候選清單
- Share information with your farm team 與牧場團隊分享訊息
- Initiate your semen order 開始訂購精液



## Breeding Decisions Made Easy: ImProving Herds Project 育種決策更為容易:改善牛群計畫

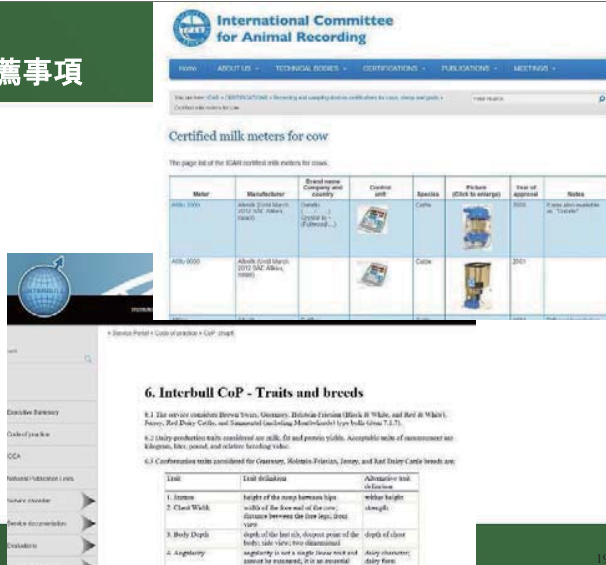
Prove it Works 證明可行



~19~

## Recommendations 推薦事項

- Utilise ICAR and Interbull Standards 應用國際畜政聯盟及國際公牛遺傳評估協會的標準
  - Identification 公牛身份
  - Recording Devices 紀錄的設備
  - Trait Definitions 性狀定義
  - Evaluations Stds 評估標準



## Recommendations 推薦事項

- Develop a national breeding objective/selection index to rank sires based on Taiwan dairy industry 依據台灣乳業將公牛排序,發展國家育種目標/選拔指數
- milk payment system 乳價系統
  - value of non-production traits such as fertility. 非生產性狀的價值,例如繁殖力
- Provide breeding values to farmers to make informed breeding decisions. 提供酪農育種價做為育種決策



## Industry Partners 產業的伙伴

