



**SHEEP GENETICS**



# Pilot Project I

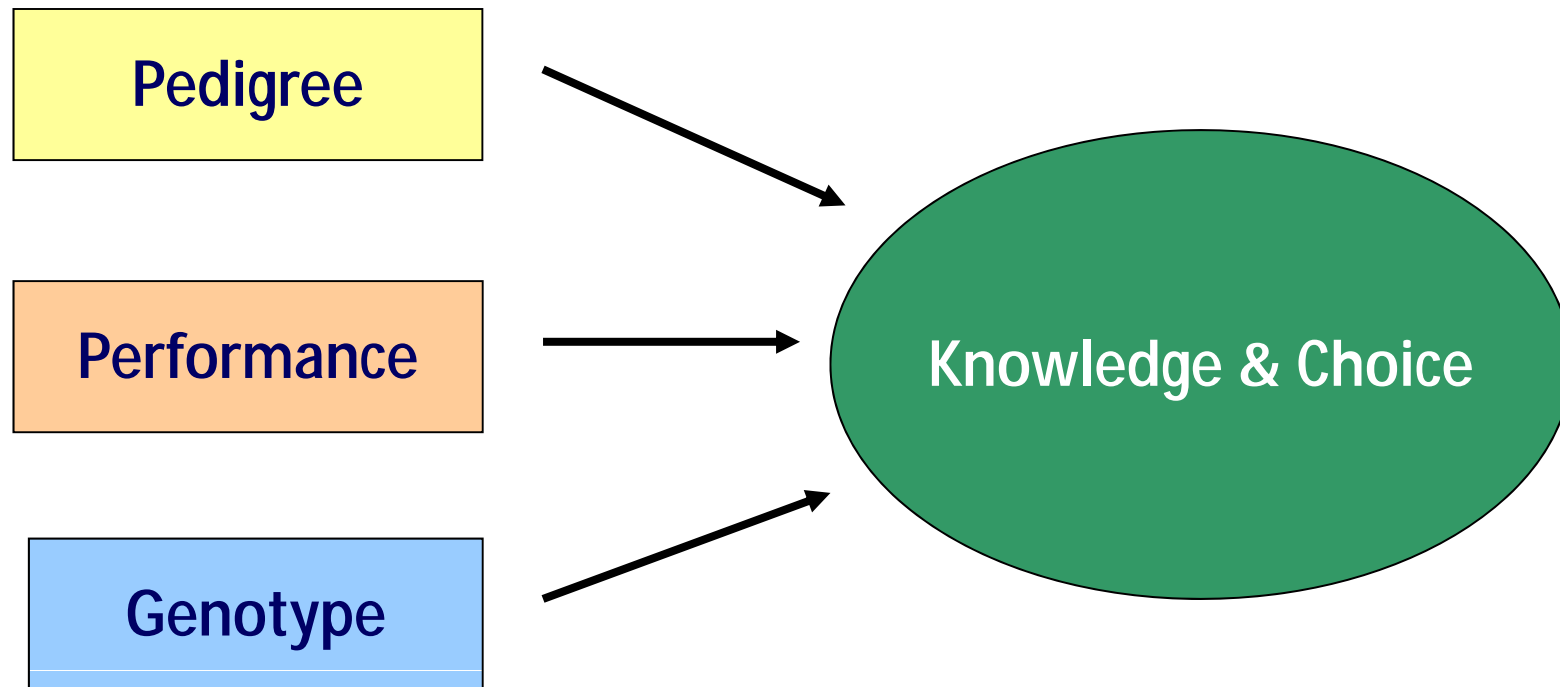
- Aims and Outcomes -

Sam Gill



# What is the aim for genomics?

Seamless integration!



# Pilot Project - Aims

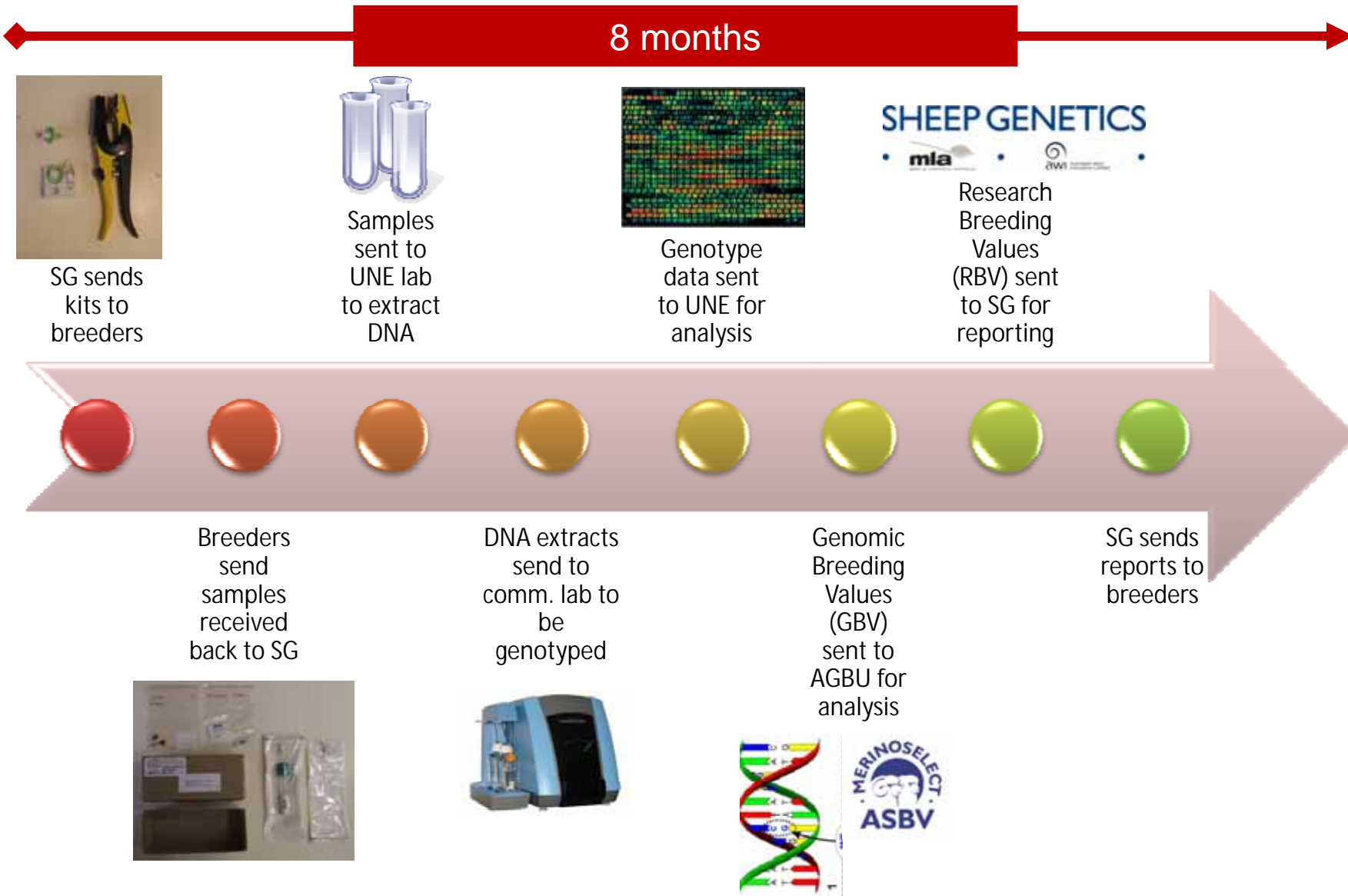
- Road test the use of SNP chip in a commercial situation
  - Look at critical control points of supply chain
  - Can we use SNP chip information to improve breeding decisions?
  - What is the most cost effective process?
  - How long will it take to get information back?
  - What quality control is needed?

	Nominated	Returned	Report Sent
<b>MERINO</b>	<b>103</b>	<b>88</b>	<b>53</b>
MERINO	66	53	27
POLL MERINO	37	35	26
<b>MATERNAL</b>	<b>91</b>	<b>75</b>	
BORDER LEICESTER	27	20	*
CORRIEDALE	16	16	*
BOND	3	3	*
WILTIPOLL	1	1	*
COOPWORTH	4	4	*
BOORoola	1	1	*
DORPER	8	2	*
WHITE DORPER	9	7	*
SAMM	7	7	*
DOHNE	13	12	*
COMPOSITE	2	2	*
<b>TERMINAL</b>	<b>246</b>	<b>164</b>	<b>102</b>
HAMPSHIRE DOWN	2	1	*
SOUTHDOWN	1	1	*
POLL DORSET	74	42	26
TEXEL	17	14	8
SUFFOLK	11	8	5
WHITE SUFFOLK	129	88	63
EAST FRESIAN	3	3	*
CHAROLLAIS	4	3	*
ILE DE FRANCE	5	4	*
<b>Grand Total</b>	<b>440</b>	<b>327</b>	<b>155</b>

# What has happened so far?

- First reports have been sent
  - Merinos
  - Terminals (PD, WS, SUFF, TEX)
- Information improving monthly
  - More measurements = better accuracy
  - More traits can be included
- Evolving marketplace
  - 50k SNP chip > \$150 - \$200 (wholesale)
  - Does not include DNA extraction, labour, etc

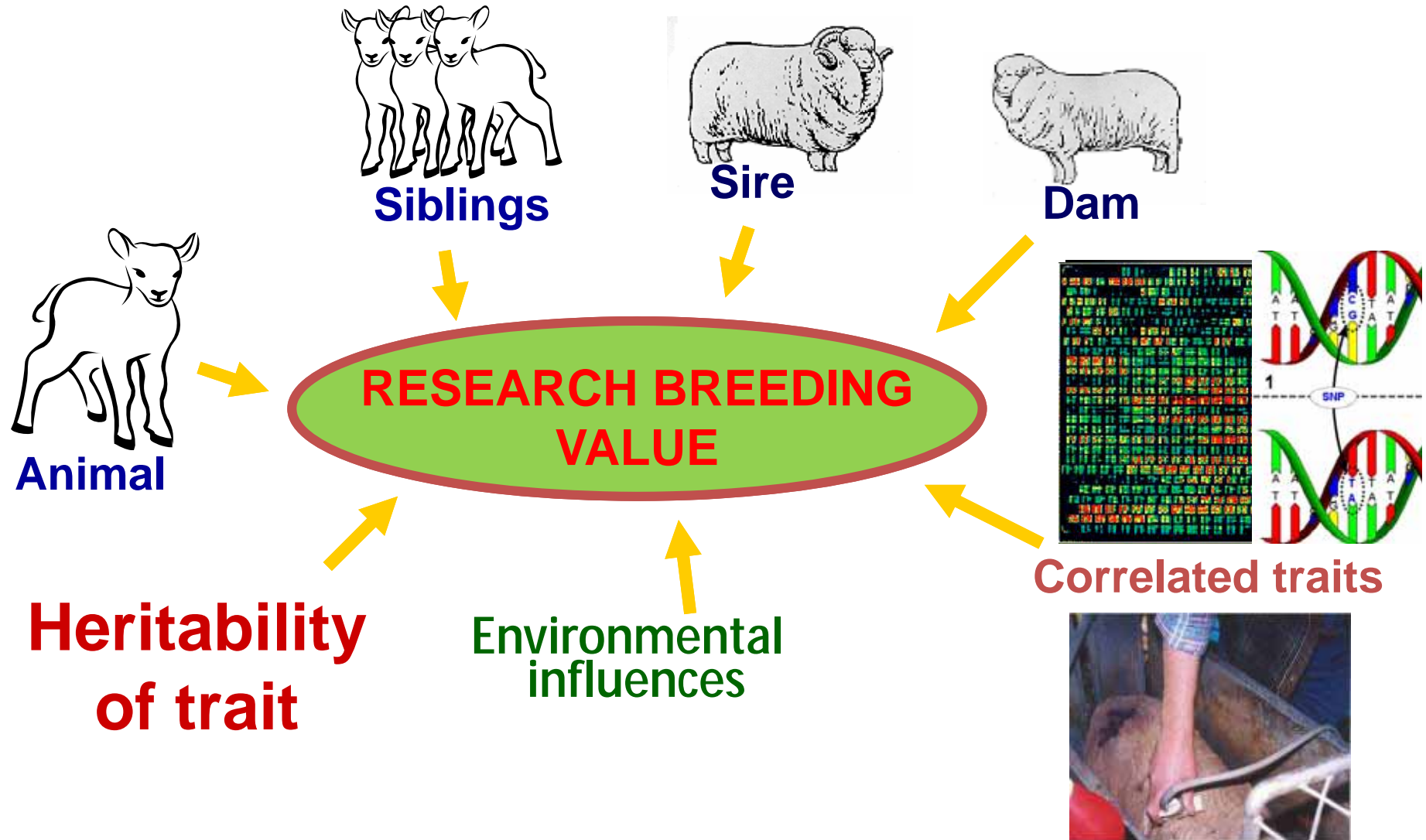
# Pilot Project timeline



# What have we learnt for next time?

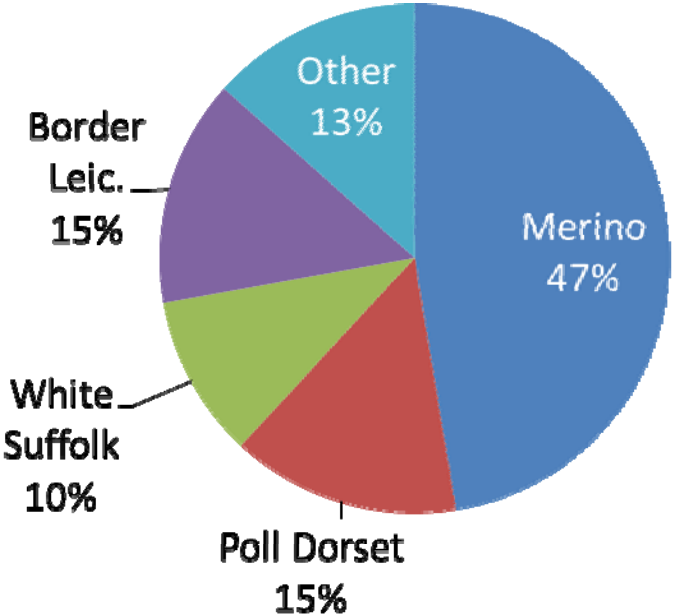
- Importance of inventory tracking
- Which is the most cost effective DNA collection method
- It will continue to get better....
  - Quicker turnaround
  - More traits at higher accuracy

# Calculating Breeding Values

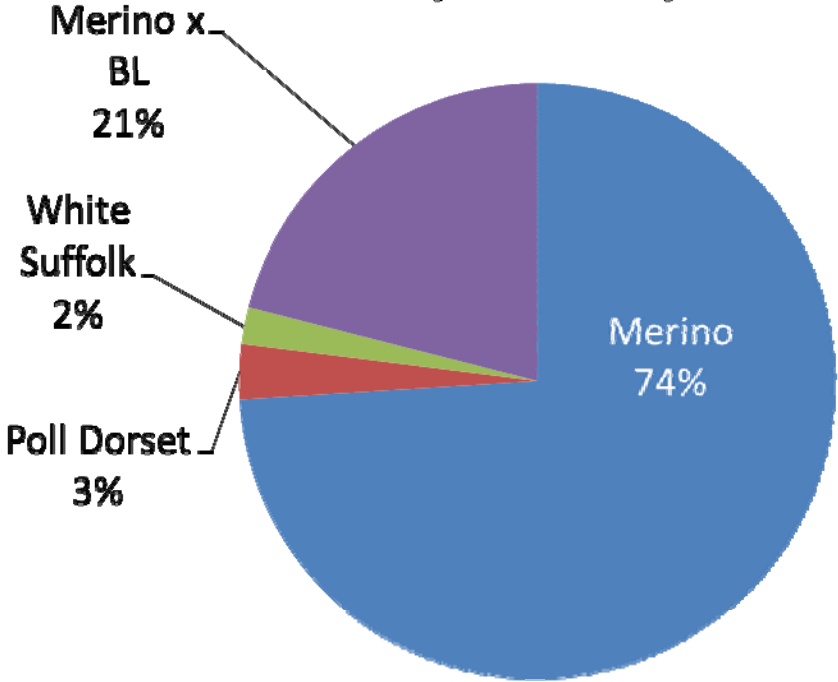


# Breeds in reference dataset

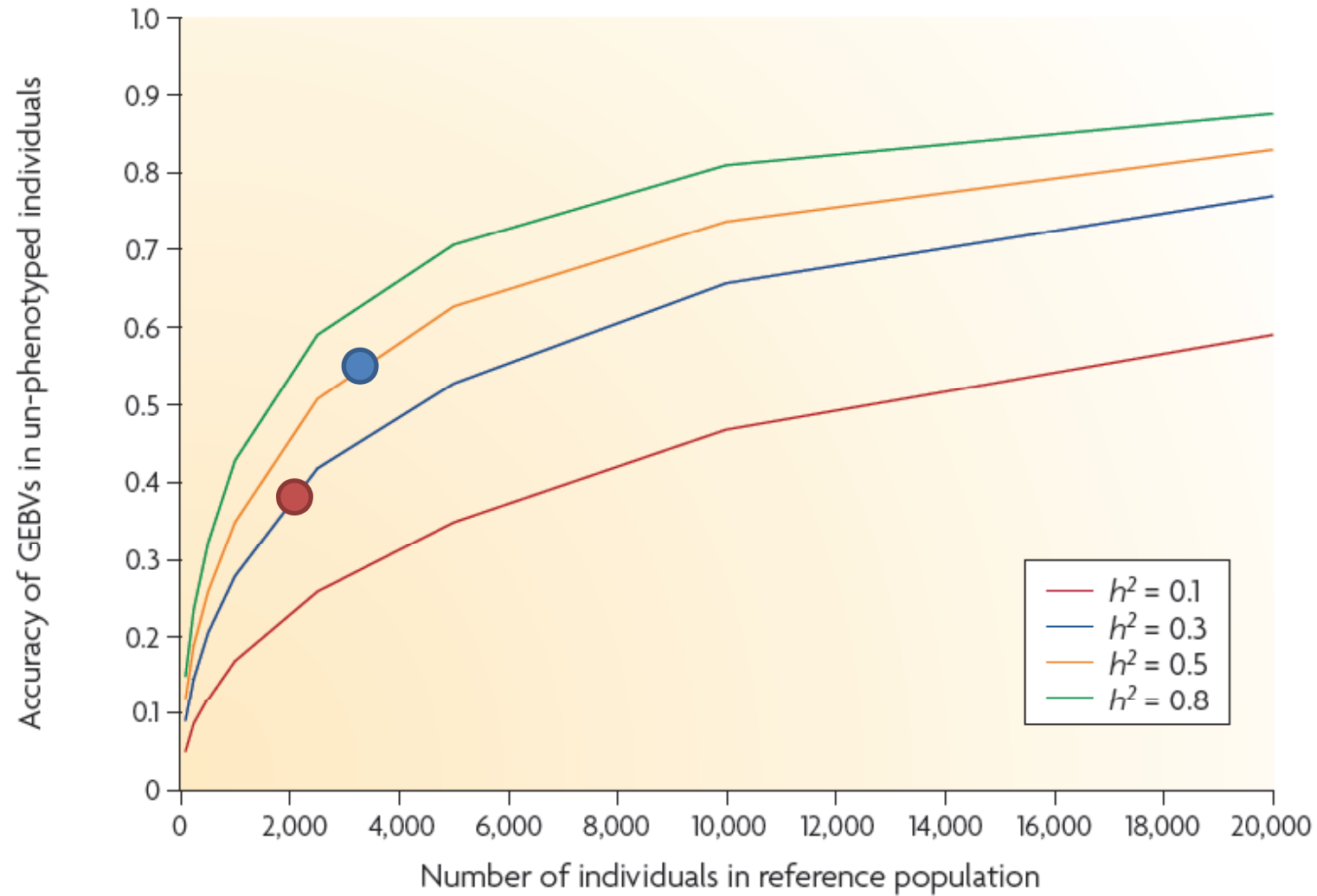
**Reference Population by Ram Breed**



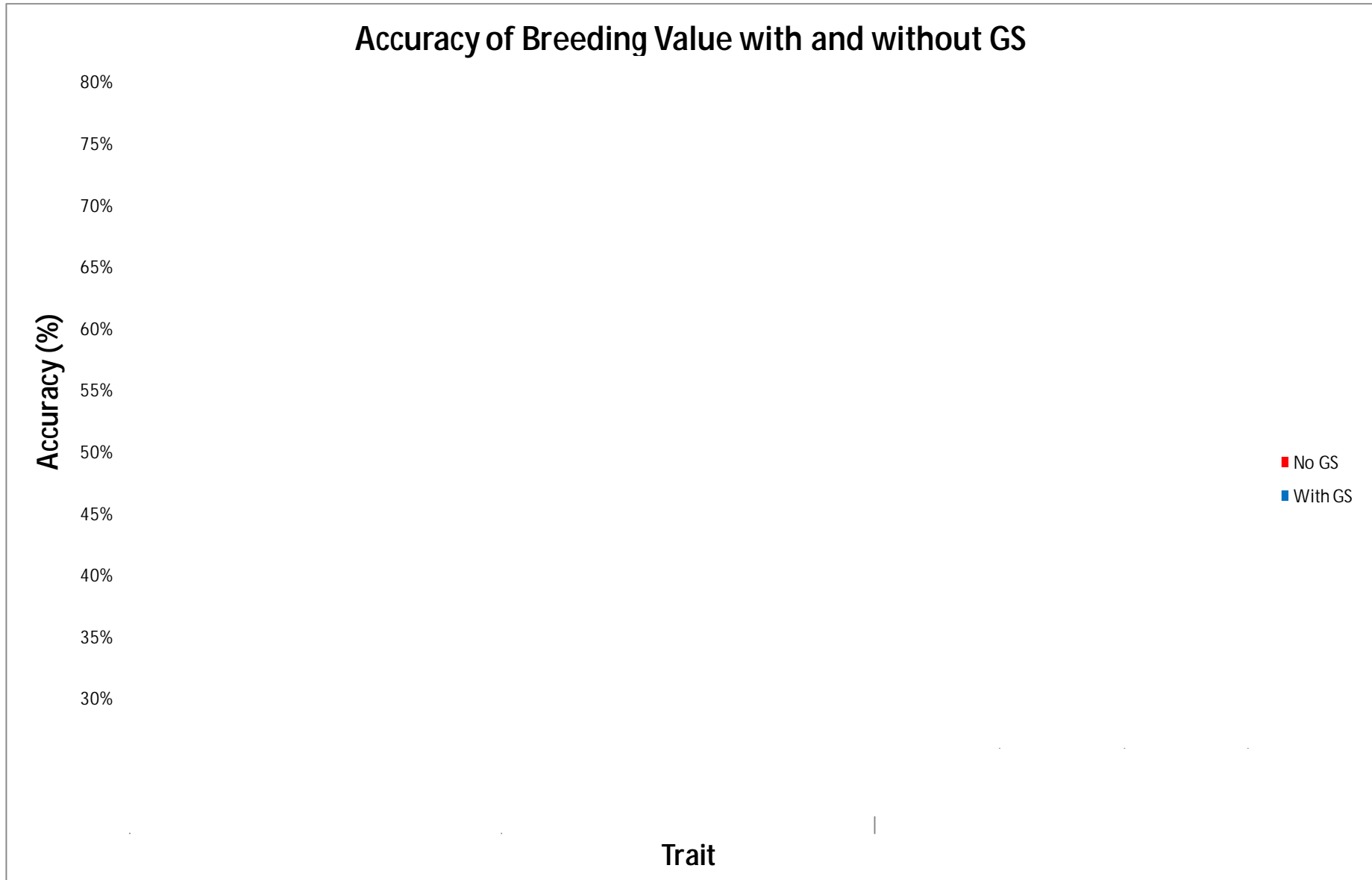
**Reference Population by Ewe Breed**



# Accuracy depending on how many were used



# GS – Terminal Sire



# What's next? → proof of concept

- A number of pilot program rams in the 1<sup>st</sup> phase have been selected as sires in Information Nucleus
- Will get progeny test on both standard and difficult to measure traits
- Will be able to do correlation against current RBVs

# Next traits?

Traits	Terminals	Maternals	Merinos
Existing	PWT, PEMD, PFAT		PWT, PEMD, PFAT, YFD, YCFW, YSL, EBWR
Future	SF5, IMF, LMY, CWT, CEMD, CFAT, POLL, CARWELL, MYOSTATIN, CALPISTATIN		SF5, IMF, LMY, CWT, CEMD, CFAT, BWT, POLL, PIGMENT

# Next steps

- Proof of concept / pilot project II
  - Use pilot project for last round of IN sire selection
  - Testing rams in the information nucleus for 2011 lambs
  - Strategic sampling of next round sires using pedigree
  - Testing young sire programs rams and evaluating those
- Benefit:cost analysis of potential products
- Next round of RBV / genomic traits
  - Horn / poll test
  - Eating Quality
  - Carcase traits
- Cost of production calculator