GGBP and how the pilot scheme has been developed

by Dr Maurice Bichard and Digby Gribble

INTRODUCTION

The Global Guernsey Breeding Plan was formally proposed at the New Zealand conference in 1995 (though its origins may have been as early as 1992), outlined further in Kentucky in 1998, and worked over in great detail in South Africa in 2001. At that time we were almost through the research programme based in Edinburgh where John Woolliams was exploring the optimum structure and procedures, while UK and Island breeders had drawn up plans for management and finance. I proposed to change the word 'Plan' to 'Project'. John then helped us to design an overall index value (Guernsey Merit Index or GMI) which gave scientific rigour to our desire to combine production and type data using the weightings which breeders found acceptable, and these were agreed by late 2001.

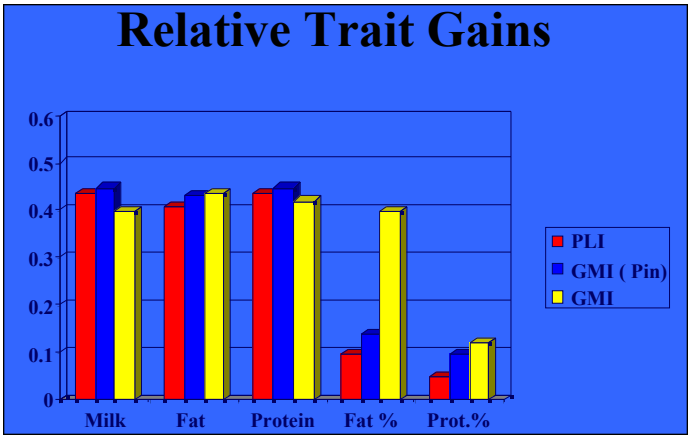
The 'Project' was then launched and could now be more properly designated the GGB 'Programme'.

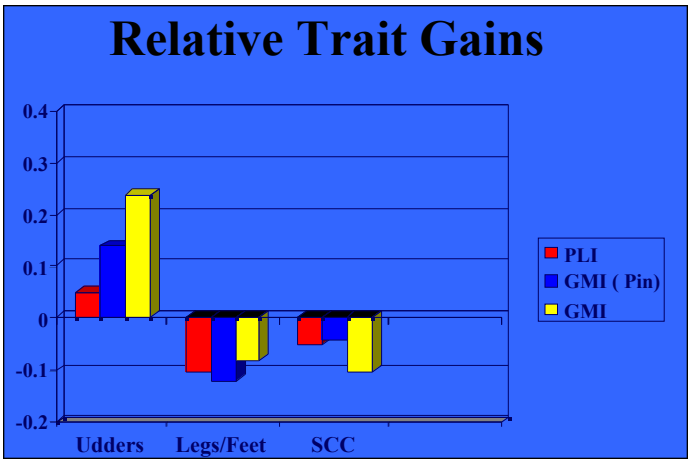
The programme is simple in concept. It rests on the acceptance that no external organisation is going to provide a steady supply of proven bulls with the characteristics required by UK and Island milk producers. The breed associations must therefore shoulder the responsibility for continuing the breed's improvement, using whatever help they can get from the States of Guernsey, the UK Milk Development Council, and the milk recording and data processing organisations, plus the worldwide scientific community. Two of the associations (EGCS and RGA&HS) have taken the initiative but hope to include all the others in time.

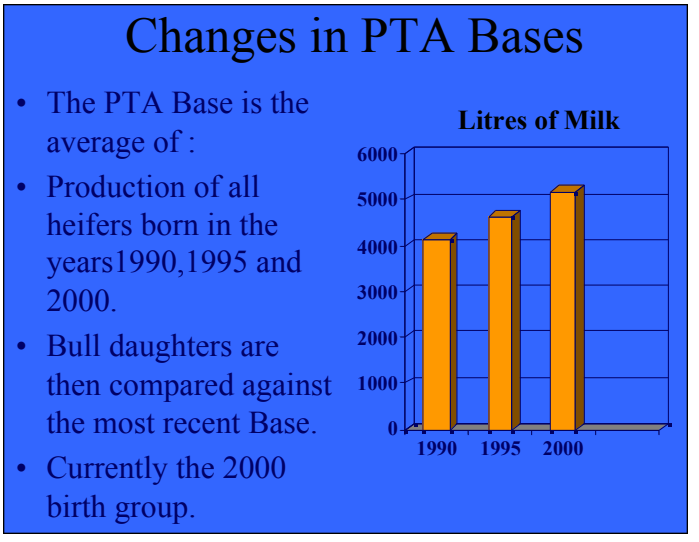
The procedures we adopted also acknowledge that even the combined populations are too small to justify the complications of a conventional progeny testing programme. Instead we rely on identifying potential bull dams from the top indexing cows, agreeing matings to the best available bull sires, arranging for suitable bull progeny to be reared, and collecting relatively small quantities of semen from each. This semen is then used, not to produce a small number of test daughters, but on as high a proportion of females as possible. The optimum is to use somewhere between six and 20 young bulls per year and turn them over quickly (fewer if their sires are unrelated). Their dams should be as young as we can identify them, chosen as soon as we are reasonably confident that they are the type of cow we need.

Since it is only two and a half years since the official launch of GGBP, we clearly cannot present real evidence of genetic progress from its use. We must recall that EGCS had introduced its Guernsey 2000 scheme in 1998, and since then had promoted a new panel of young bulls annually while the Island was also utilising young home-bred bulls alongside imported semen, so that GGBP has evolved fairly seamlessly from the earlier schemes. The main differences today are that the GGBP management committee (a joint UK/Island group) is pro-active in creating future young bulls, and is not retaining them (or their semen) for eventual widespread use when their daughter proofs emerge. It is still worthwhile looking at genetic trends even though the GGBP itself cannot yet claim the credit for what we observe.

We can certainly claim that two vital objectives have been achieved. First, there has been widespread acceptance of the







GMI as an agreed objective for milk producers. It was derived using their inputs. The Animal Data Centre (now called MDC Evaluations Ltd) was persuaded to calculate and publish it, and members seem generally satisfied that it is identifying useful cattle.

The GMI

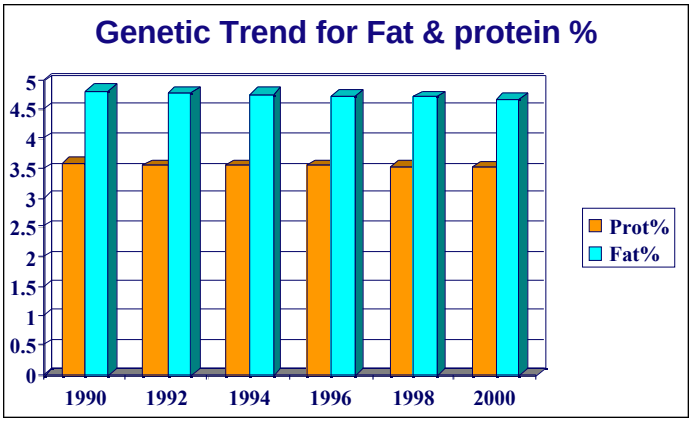
This index was designed specifically for the Guernsey breed (in UK and the Island) in order to select it in directions agreed by the breeders. Major emphasis (60%) is given to the production traits, but also to udder score (23%), and feet and legs (12%). The other trait included is somatic cell count (5%). The three production traits (liquid yield, fat yield and protein yield) are weighted more heavily in favour of fat than in the UK's £PIN (production profit index) since it was agreed to try to restore some of the breed's fat percentage which had been lost in recent years. The actual index weights are shown below. These are the weights which should give the desired degree of emphasis to the six separate improvement goals.

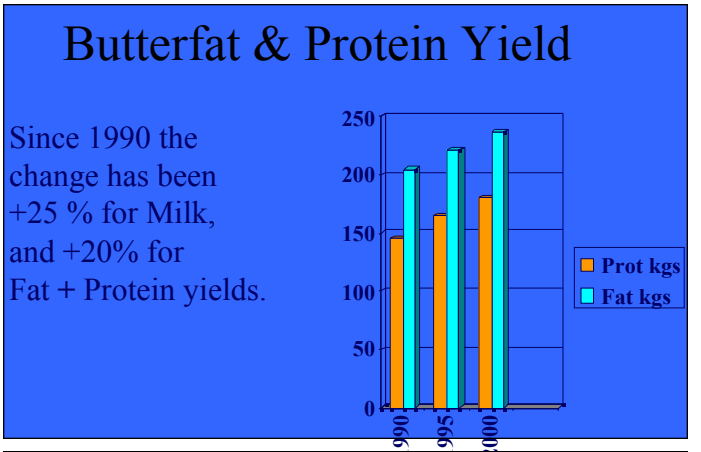
	GMI Weight
Liquid yield (kg)	-0.40
Fat yield (kg)	9.00
Protein yield (kg)	20.00
Udder score (units) EBV	24.3
Feet and leg score (units) EBV	10.9
Somatic cell count	-0.65

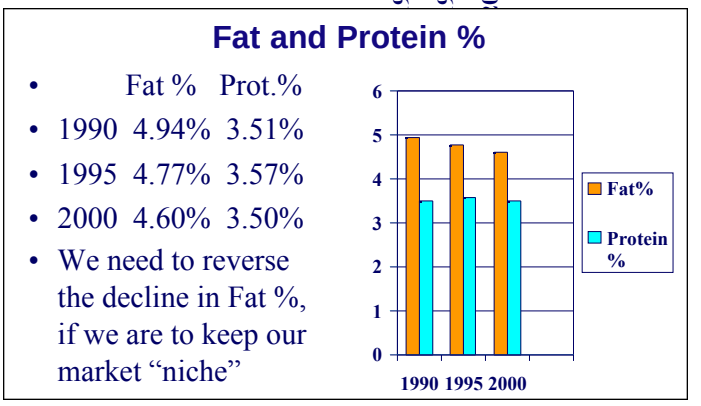
The predicted results from basing selection on this index are positive gains in fat and protein percentage (and of course in the three yield traits) and a small improvement in the udder traits while more or less holding feet and legs and SCC constant.

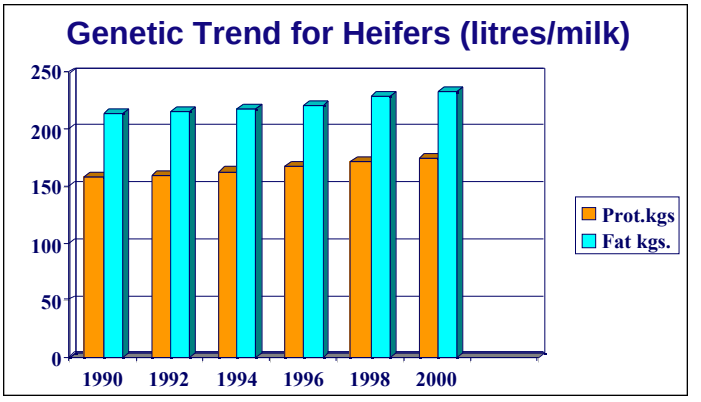
Even more important has been the way cattle owners have begun to merge their interests in a common desire to see the breed make progress. This is evident both in their willingness to have their best cows identified as bull dams (which confers almost no individual financial reward), and in their agreement to purchase the semen from successive panels of young unproven bulls. We need to subdue the urge to make individual profit from bull or semen sales at the expense of fellow members, and put in place the realisation that in such small populations all must work for the common good.

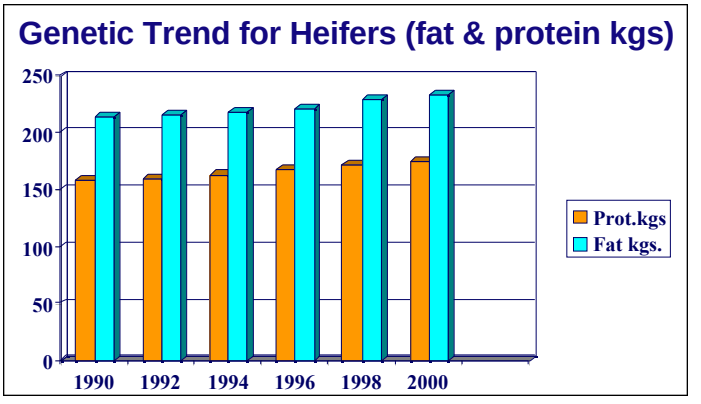
Of course such cooperation will in the longer term depend upon positive results, and we look forward to seeing these quite soon. It is our hope that other national populations may be persuaded to join the programme, even if this requires further adaptations so as to accommodate their needs.











Selection of Bull Mothers

EGCS are adding and removing cows and heifers to the approved list after each quarterly MDC proof run. The aim is to add "depth" and accuracy to the cow families chosen and to raise the standards.

Groups 5 & 6 are the first groups to all result from planned matings. Earlier Groups were chosen from the highest GMI working age bulls available.

Average GMI of Potential Bull Mothers and their expected Calves

Cows on List 2001/2002

Cows	Milk kgs	F+P kgs	Fat%	Prot%	L/Ft.	Mamm.	GMI
40	343	29.4	0.02	0	0.57	1.2	291

Cows on List 2003/2004 (17 on both lists.)

Cows	Milk kgs	F+P kgs	Fat%	Prot%	L/Ft.	Mamm.	GMI
43	358	32.1	0.05	0	0.64	1.33	322

38 Calves Expected in 2004

Calves	Milk kgs	F+P kgs	Fat%	Prot%	L/Ft.	Mamm.	GMI
38	436	36.3	0.02	-0	0.65	1.33	346

Averages of Young Bulls (2002-2003)

GGBP Groups 1-4

Bulls	Milk	F+P	Fat%	Pro.%	L/Ft	Mamm.	GMI
18	394	32	0.01	-0.02	0.8	1.55	319

GGBP Group 5 to be Used Summer 2004

Bulls	Milk	F+P	Fat%	Pro.%	L/Ft	Mamm.	GMI
3	358	32	0.02	-0.02	0.73	1.72	336

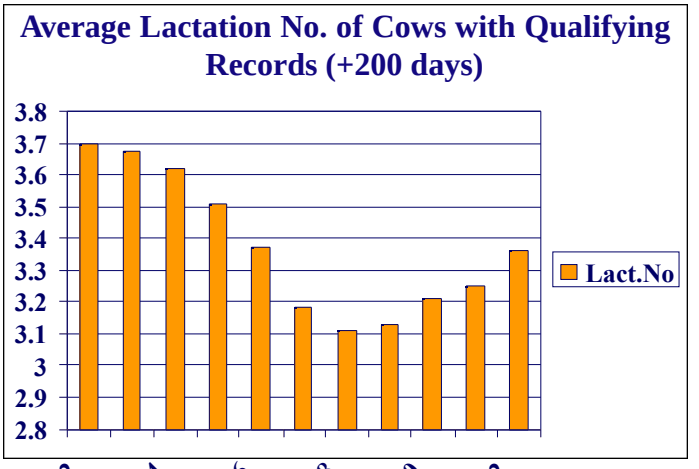
GGBP Group 6 &7 Winter 04 /Spring 05

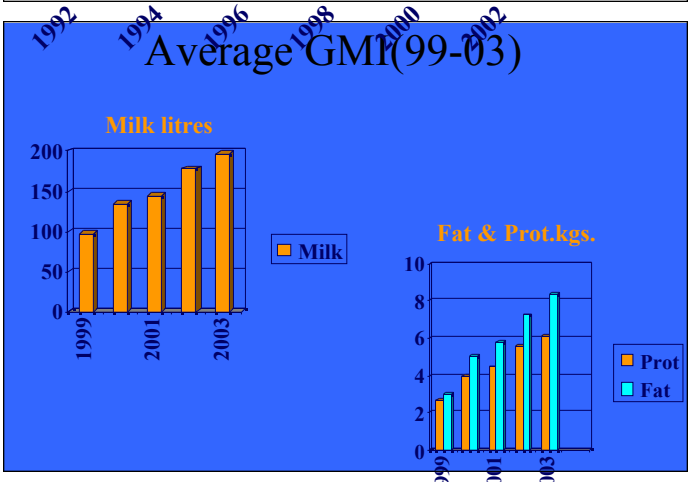
Bulls	Milk	F+P	Fat%	Pro.%	L/Ft	Mamm.	GMI
5	473	38	0.02	-0.04	0.48	1.15	360

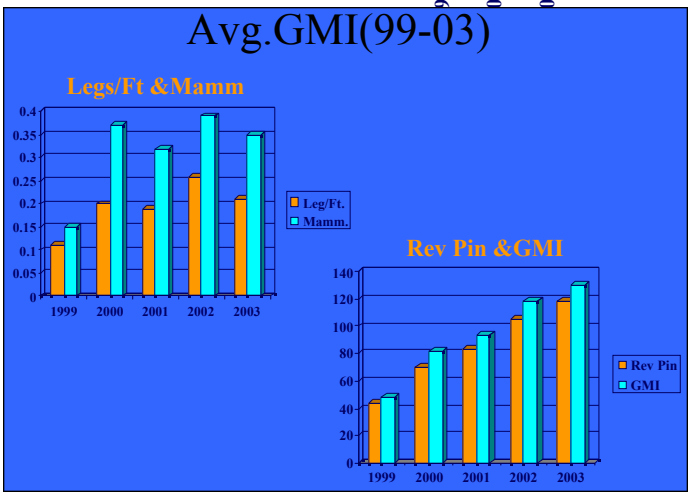
Measuring the success of GMI

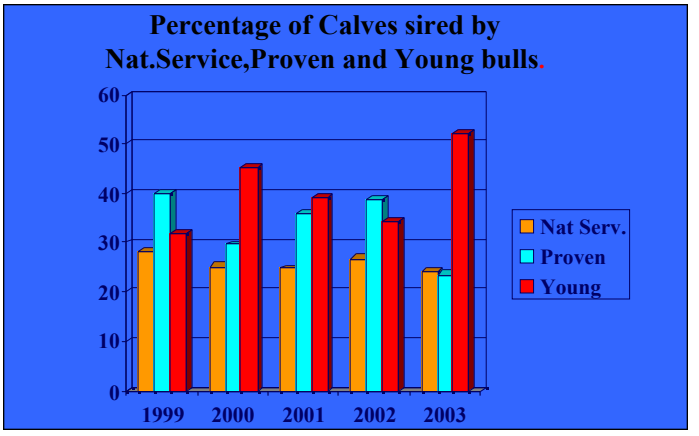
- The EGCS were able to use a grant from MDC to explain and promote GMI to our members.
- The MDC wanted to know how we could measure the success of the GGB Programme.
- The EGCS decided to calculate the Parent Averages of all calves born in each year from 1999 - 2003.
- It is very encouraging to see the "predicted" progress from these calculations.

contnued on page 46

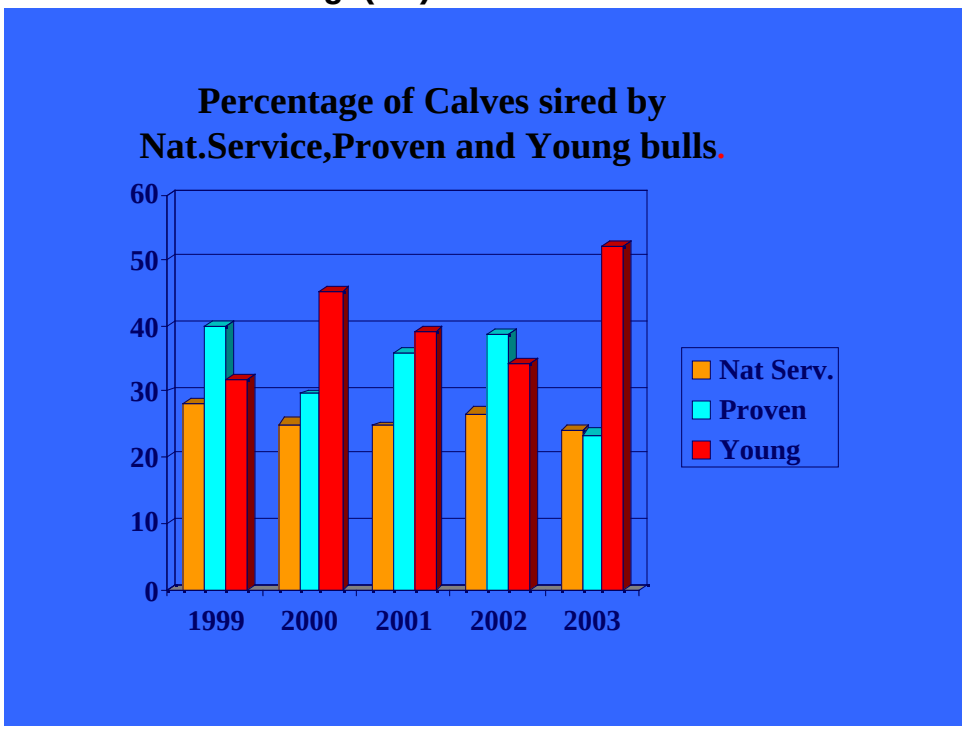








Benefits of Young (AI) Bulls



Whilst the GMI has been calculated for each year group of heifers, calves from individual bulls spill over into different years. In 2003 there were calves sired by 27 different young bulls used in AI.

The table above compares progeny of these young bulls against the average of all heifers. FMD in 2000/2001 disrupted supplies of semen and the first GGBPAI calves did not arrive until the summer of 2003.

Acceptance of GMI

Remarkably there were calves registered by 110 different bulls in 2003, no shortage of variety! Forty of these were Natural Service sires of whom only 10 had sired more than tendaughters. 43 were proven AI sires, 9 having ten or more daughters and twenty seven were young AI sires, 20 of whom hadsired ten or more daughters. With less than ten daughters theother 71 sires will have a minor impact within the breed.