

THE WORLD GUERNSEY CATTLE FEDERATION

Secretary's Report 2013

MEMBERSHIP

The World Guernsey Cattle Federation links the following societies and associations with the aim of developing and promoting the Guernsey Breed on an international basis:-

American Guernsey Association
Canadian Guernsey Association
English Guernsey Cattle Society
Guernsey New Zealand
Guernsey Cattle Society of Australia
Kenya Guernsey Cattle Society
Royal Guernsey Agricultural and Horticultural Society
South African Guernsey Cattle Breeders

Sadly, the Brazilian Guernsey Cattle Breeders Association has been wound up. Nevertheless, WGCF still has contact with the former President.

The Current officers of the Federation are:-

PRESIDENT: Mr. Ray Watts, Royal Guernsey Agricultural and Horticultural Society.

VICE-PRESIDENT: Mr Jim Lichtwark, Guernsey New Zealand

CHAIRMAN OF THE EXECUTIVE BOARD: Mr Neil Jensen American Guernsey Association.

EXECUTIVE BOARD: Lt. Col. H. C. Watson (EGCS), Mr. Reuben Kotze (SAGCB), Mr. Jim Lichtwark (GCBANZ), Mr Neil Jensen (AGA), The Federation Secretary.

FEDERATION SECRETARY: Bill Luff, WGCF Federation Secretariat, Guernsey

ASSOCIATE MEMBERS:-

States of Guernsey Commerce and Employment Department, Primary Industries Unit, Guernsey (Honorary Associate Member)

FUNDING

Funding is by grant from the States of Guernsey and by contribution from Member Societies. The grant from the States of Guernsey is currently under review. Member Societies undertake internal mailing / distribution of the Federation newsmagazine, GUERNSEY WORLD. They also contribute financially or in kind to Federation projects and communicate regularly with the Federation Office.

FEDERATION SECRETARIAT

The Federation Secretariat is based in Guernsey.
The official address of the WGCF Secretariat is

**World Guernsey Cattle Federation,
The Hollyhocks, 10 Clos des Goddards, Rue des Goddards, Castel,
Guernsey GY5 7JD**

The Secretary carries out most of his work from his home. Since the 13th World Conference The Secretary visited South Africa in 2011 where he addressed the AGM of the South African Guernsey Cattle Breeders. He has also visited the American Guernsey Association Annual Convention and World Dairy Expo.

The Secretary attended the Biennial Sessions of the International Committee for Animal Recording and Interbull Meetings in Cork where he addressed a meeting of World Breed Federations and took part in one of the initial meetings of the Gene2 Farm project.

The Secretary has been closely involved in the progression of the Guernsey Global Breeding Programme in UK and Guernsey Island.

FINANCE

Copies of the Federation Income and Expenditure accounts for 2011/12 have been supplied to all member associations and will be available for inspection at their respective offices. Funds held by the Federation at the 1st. of June 2013 totalled £1,234.35.

GUERNSEY WORLD.

It seems likely that in future it will not be possible to publish hard copy unless requested and then only when the costs are met. WGCF has arranged to publish digitally through the kind offices of the American Guernsey Association. In future issues will be smaller and will report on scientific developments as and when necessary.

WORLD CLASS RECORDS

No new cows have entered the Guernsey register of World Class Records since the 13th World Conference.

The current World Class records for Guernseys are:

305D MILK Breezy Point P Racer

6-06	39,200M	1,782F	1,174P lbs
	17,781M	808F	533P kgs

365D MILK Breezy Point P Racer

6-06	46,154M	2,175F	1,408P lbs
	20,935M	987F	639P kgs

305D FAT Langhaven Option Nadia

3-04	33520M	1,989F	1,084P lbs
	15,204M	902.F	492P kgs

365D FAT OCS Dairy Heathers Goldfoot

4.04	43,630M	2,814F	1,471P lbs
	19,790M	1,276F	667P kgs

305D PROTEIN Valley Oaks Pistachios Pretty

5-02	39,200M	1,782F	1,282P lbs
	17,781M	808F	582P kgs

365D PROTEIN OCS Dairy Heathers Goldfoot

4.04	43,630M	2,814F	1,471P lbs
	19,790M	1,276F	667P kgs

STATE OF THE BREED

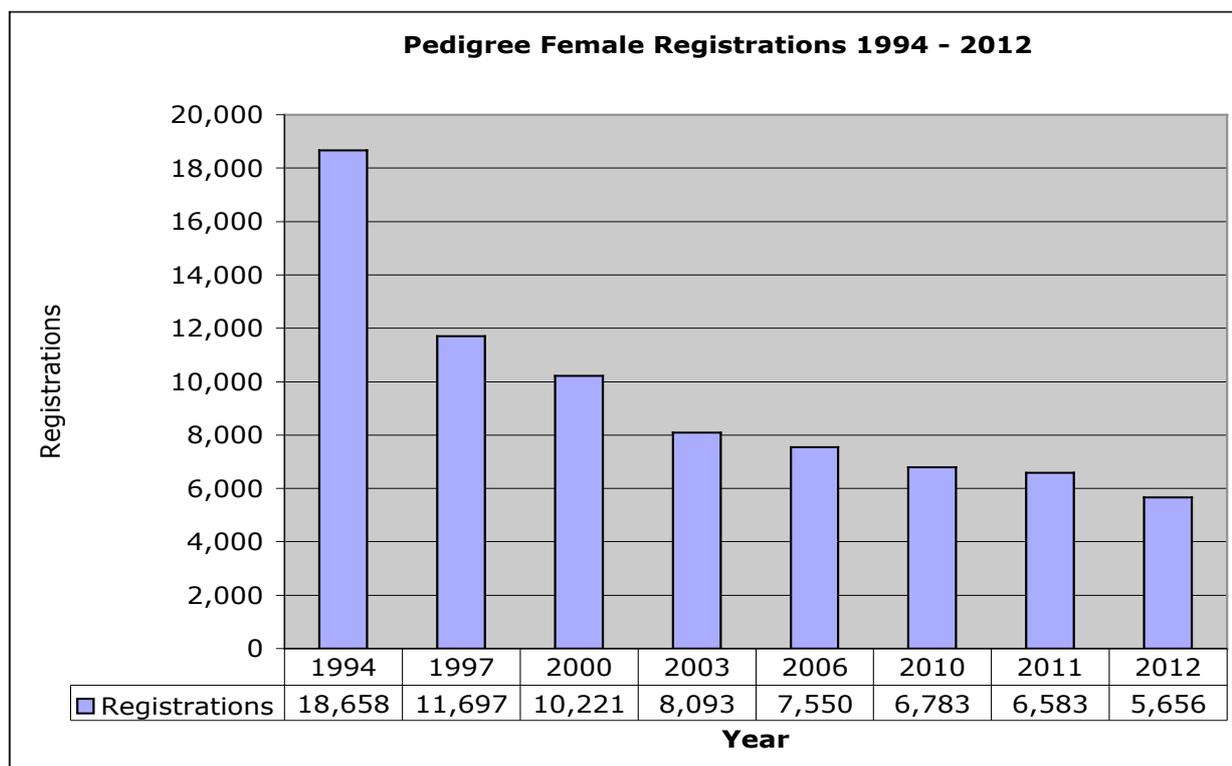
The 8th. World Guernsey Census, which covers the period 2010 – 2012 shows a continued decline in pedigree registrations from 7936 - 6713. In the same manner there

has been a decline in total pedigree Guernseys from 20,621 to 19,868 and in officially milk recorded Guernseys from 13,262 to 12,392. There has been a smaller decline in Guernsey owners from 879 - 865 over the same period but it is quite clear that this figure has been mitigated by a significant number of members who own less than 10 animals – Guernseys seem to be popular with hobby farmers.

The Guernsey has always been a small population breed although there was a sizeable population in USA in former years. Even in 1980 38,364 Guernsey calvings were used in genetic evaluations in USA, this had fallen to 6,076 in 2011. That is an 84% decrease in 30 years.

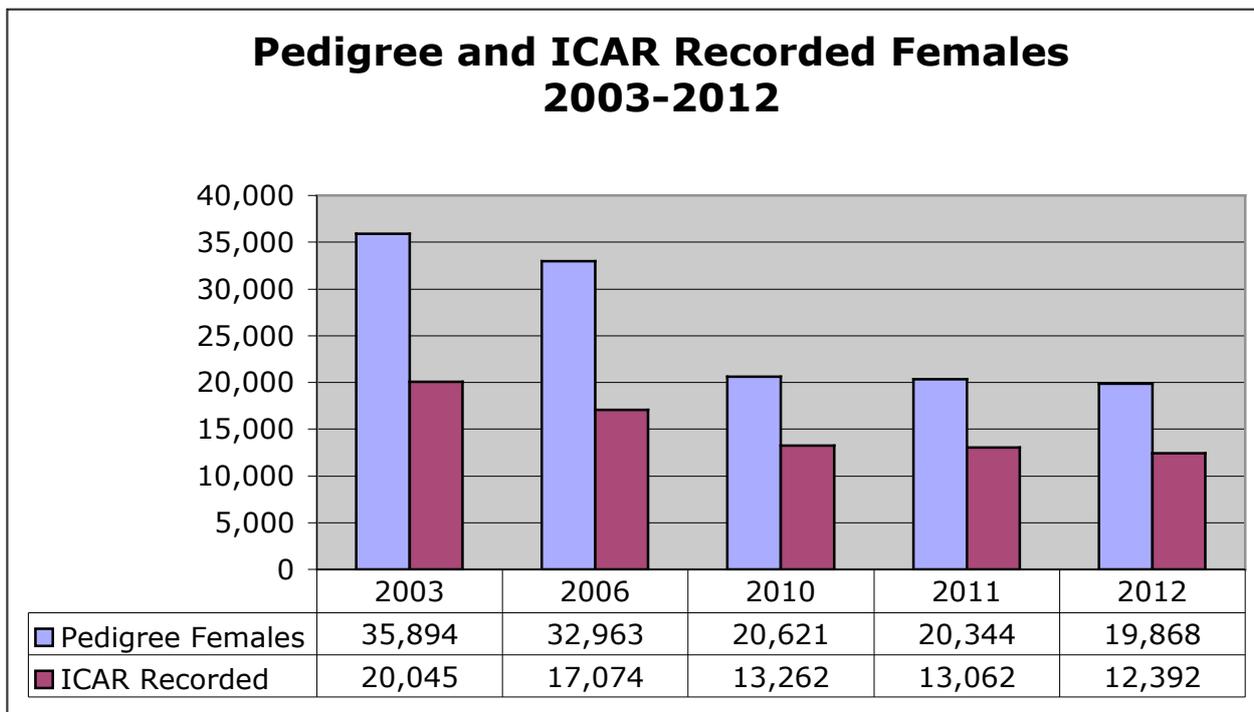
The following two graphs demonstrate the current rate of decline. Figures were obtained from WGCF Member breed societies and the ICAR yearly cow milk enquiry.

Figure 1. Female Registrations 1994 - 2012



This worrying decline in registrations is reflected in Figure 2, which shows the decline in the global female population alongside the very important ICAR standard milk recorded population of Guernseys. Only ICAR recorded Guernseys can contribute to genetic evaluations. These are the cows on which our future must be built.

Figure 2. Pedigree and ICAR recorded Guernseys 2003 - 2012



PROJECTS IN PROGRESS

INTERBULL

WGCF continues to work closely with Interbull for the benefit of the Guernsey breed.

International evaluations are vitally important to the Guernsey with its small populations scattered across the world. Guernsey breeders need accurate predictions of the genetic merit of cows and bulls in other countries expressed in their home country format and using indices that they understand. The Interbull laboratory receives data sent by individual countries and after processing returns MACE evaluations to each participating country’s bull and cow evaluation unit. Each country applies its own rules to data publication.

Besides continuing these regular services in the years to come, the Interbull Centre proposes a set of specific actions for the Guernsey breed in the next four years:

- Implementation of the second phase of the Interbull Data Exchange Area (IDEA database), adding the national EBVs and parameters to the existing database of pedigrees. Moving away from flat files into a database environment will improve significantly the efficiency of the services and quality of information. Implementation is scheduled for January 2014.
- Implementation of the International Genotype Exchange Platform (Genoex) to facilitate international collaboration in exchanges of SNP data (parentage verification and higher density chips), as well as provide tools for small organizations to benefit from genomic technologies. A Proposal is under evaluation by the Steering Committee and to be presented at the business meeting in Nantes, August 2013.
- Establish a regular inbreeding monitoring program for the Guernsey breed based on the Interbull international pedigree and eventually on genomic data. This action has

already started with a pilot study and a formal proposal will be jointly written between the WGCF and the Interbull Centre.

- Collaborate with research projects that involve Guernsey breed needs (e.g. Gene2Farm) both with data and technical expertise. On demand.
- Together with other ICAR subcommittees and working groups, provide a forum for debating the future prospects for breed associations and the cattle breeding business in general, with especial focus on the impact of genomic technologies. An initial workshop around these issues is being planned under the coordination of Dr. Brian Wickham and support from the Interbull Centre.

GENOMICS

The world's major cattle breeds are now making use of a new source of information on the expected BV of individuals. This is the GENOMIC BV, derived from an analysis of the actual genetic material found in the individual's chromosomes – based upon a sample of tissue.

Dairy statisticians have derived their prediction methods by finding which gene patterns (at several thousand sites along the chromosomes) are best correlated with accurately measured BVs of past individuals. Our problem in the Guernsey breed is that we do not have sufficient proven bulls of high reliability. So we cannot yet obtain accurate Genomic BVs.

Of course we are not alone. There are many other numerically small breeds in the world. Scientists, and the grant-giving bodies which fund their work, wish to assist us.

Our breed was asked to join a research project funded by the European Union which aims to look for solutions. Gene2Farm brings together research groups in six countries, and eleven breeders' associations or data processing centres. The work began 18 months ago and has a further 30 months to go with a budget of some 4million Euros. WGCF was originally invited to join, but as the Island is not an EU member, our participation is under the name of EGCS. Dr Maurice Bichard is the official member but works closely with the WGCF secretary.

We shall first try to maximise the number of proven bulls from around the world that have DNA analyses. This is being helped by generous contributions of funds and laboratory work in North America, and these results will be made available to the project. The Gene2Farm budget is adding a further 120K Euros (\$150K or £100K) to analyse more UK and Island individuals (bulls and cows) in Edinburgh.

We have identified 207 bulls in UK/Guernsey Island and the American Guernsey Association has 193 in progress with a pool of more recent bulls available.

But even when we have included all available samples our numbers will still be too small. Researchers will be exploring other ways, including the possible use of data from other breeds to enhance the predictive accuracy of the technique.

We expect to end up with new statistical procedures for use by our data processing centres, and advice on how to incorporate Genomic methods into our improvement programmes. We cannot, at this stage, predict what increases in accuracy these might offer over our current system based on actual type, health and production data of individuals and all available relatives.

THE GUERNSEY GLOBAL BREEDING PROGRAMME

At the 13th World Guernsey Conference Prof. Jan Philipsson showed that:

- Important improvements had taken place in production and conformation at the expense of a serious decline in fertility
- Present selection for GMI had not help improve fertility
- Important to revise the GMI to be a true Global Merit Index and include female fertility (CI) for sustainability of the breed
- Important to sample many young bulls and keep a high use of them in AI
- Careful global selection of bull sires and maternal grandsires regarding proofs for production, SCC, fertility and diversity.

Prof. Philipsson also pointed out that the Global calving index for Guernseys was increasing by 1 day annually.

GGBP and SUSTAINABILITY

FEMALE FERTILITY

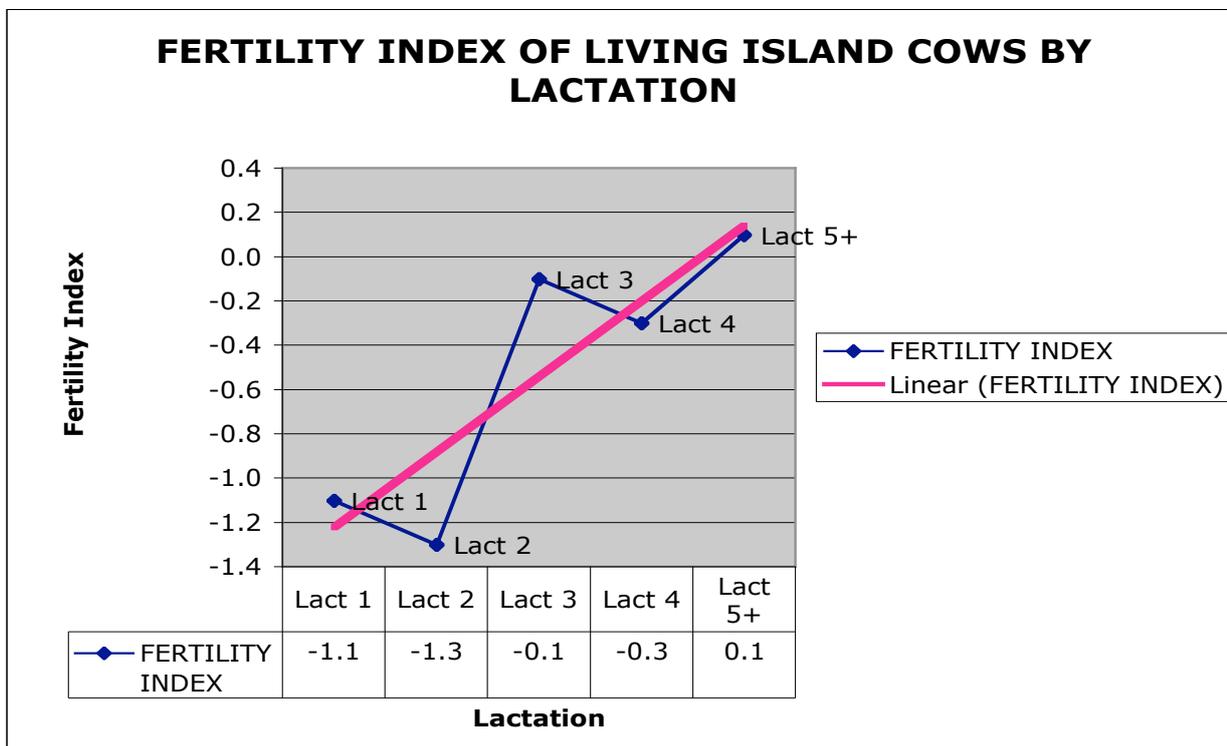
With the above in mind WGCF commissioned Dr. Janet Roden to consider how GMI might be revised to halt the decline in Female Fertility. Dr. Roden travelled to Uppsala for discussions with Prof. Philipsson and a new index, GMI + Fertility (GMIF) was developed.

$$GMIF = \text{SUM}((\text{PTA Milk} \times -0.4) + (\text{PTA Fat} \times 9) + (\text{PTA Prot} \times 20) + (\text{PTA Legs \& Feet} \times 10.9) + (\text{PTA Mammary} \times 24.3) + (\text{PTA SCC} \times -0.65)) + (\text{Female Fertility} \times 25))$$

Island breeders have adopted GMIF by as the selection index for their breeding programme.

It is clear that Female Fertility is linked to survival in the Island population.

Figure 6 Fertility Index of Living Island Cows by Lactation



INBREEDING and DIVERSITY OF PEDIGREE

Melka et al calculated that the Ne (Effective population) of the USA, Canada and South African Guernsey populations were 46,46 and 57 respectively. They concluded:

This study demonstrated continued loss of genetic diversity in each of the Guernsey populations evaluated, random genetic drift being the major cause of the loss. The GSA (South Africa) population seems to have the highest genetic diversity despite having the lowest overall population size compared with the GCN (Canada) and GUS (USA). Interestingly, 5 out of 10 major ancestors explaining about 65% of the entire gene pool of animals born between 2002 and 2007 in Canada and the United States of America were the same ancestors. This shows that GCN and GUS are highly related with regard to their gene pool. The results also showed that only 17, 13 and 27 ancestors explained 75% of the current gene pool of the GUS, GCN and GSA populations, respectively. The rate of inbreeding in each population was 0.19%, 0.16% and 0.17% between 2002 and 2007, respectively.

The very small effective number of ancestors observed in this study revealed the intensive use of few sires in all the populations. Hence, the number of offspring from these sires might be minimized to mitigate further loss of diversity. In addition, sires related to the ancestors, who have contributed very little to the current gene pool, might be included in the breeding program. The use of sires with higher genetic merit in GSA, but that did not have major genome representation to the GCN and GUS populations might also be considered for improving the genetic diversity in both populations. Moreover, the application of optimum contribution selection might help maintain the genetic diversity of GCN and GUS populations.

Prof. John Woolliams calculated the Ne of the UK and Island populations in 2007 as: Island 173, UK 105

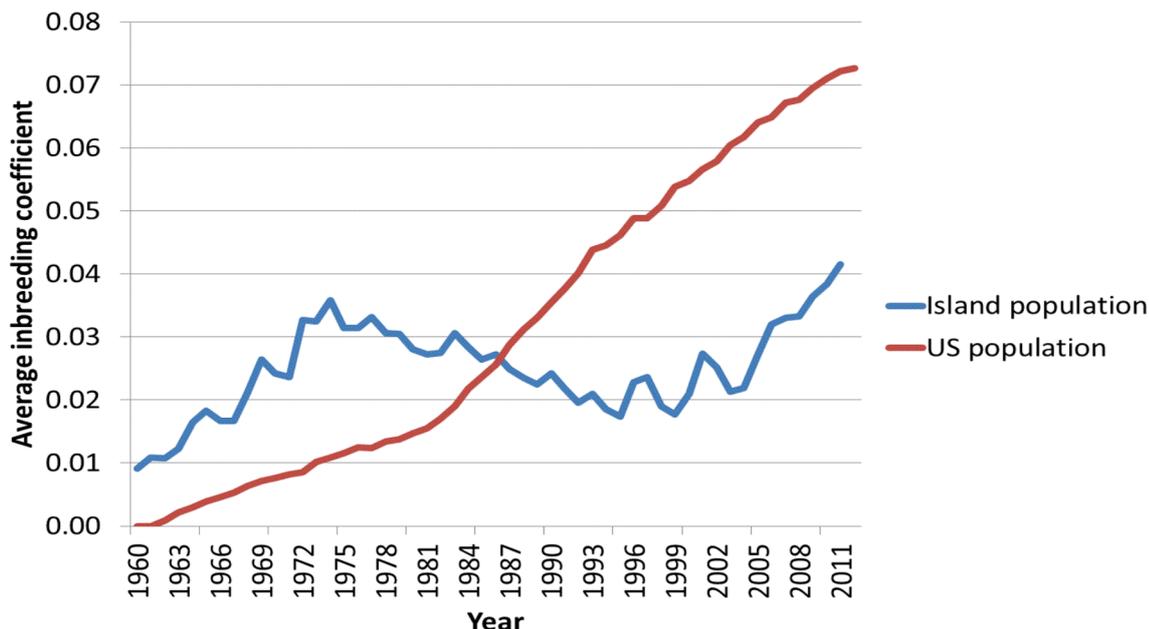
It is generally accepted that dairy breeds should have an Effective Population size of at least 50. If Ne falls below 50 the consequent loss of genetic variation may compromise the sustainability of the breed.

Effective Populations

CANADA	46
GUERNSEY ISLAND	179
SOUTH AFRICA	57
UK	105
USA	46

However, it is the underlying rate of increase in inbreeding coefficient that is most worrying.

Figure 5. Average Inbreeding coefficient of Island and US Guernseys



Data for the UK population have not been calculated but the general level of inbreeding in the Island cattle is low. Of calves born in 2011, 48% had an inbreeding coefficient lower than 3.125%, and only 12% of calves had one higher than 6.25% (the equivalent of its parents having one common grand-sire).

The average inbreeding coefficient of registered calves born in the Island in 2011 was 4.2% compared with 7.3% in the US population.

After a fall during 20 years from the mid-1970s, presumably due to the use of unrelated UK, US and Canadian bulls by AI, the average inbreeding coefficient is now increasing year on year at around 1% per generation and has more than doubled in 10 years. This is similar to the rate of increase in the US and Canadian population, slightly higher than the South African population, and should be of concern.

It is generally accepted that in order to maintain sustainable levels of genetic diversity in a population over the long term, the rate of inbreeding should not exceed 0.5 to 1% per generation.

Research indicates that these levels have been attained and in some cases exceeded in recent years

However, even at this level sustainable increase of genetic improvement can be effectively continued with the use of computer software to apply Optimum Contribution.

I suggest that every Guernsey Breed association should take careful note of what is happening to our breed in terms of sustainability and take action to ensure a prolonged and profitable future for our breed.

WE CAN ALL LIST THE ADVANTAGES OF THE GUERNSEY

We have a breed that has proven unique qualities particularly with regard to milk composition. Although efforts have been made over many years to capitalise on specific milk qualities such as beta carotene content, superb taste and drinking qualities, ideal composition for growing children and now beta casein A2, other than in the case of a few well planned and notable exceptions, the average Guernsey breeder has not really

benefited from anything other than premiums on conventionally assessed milk quality (fat and protein content).

That may change in the future. There is some thought that as global milk markets shift there will be more opportunity for unique branded products. A leading example of that is A2 Milk, that has cleverly combined a number of marketing opportunities in Australia and claims to improve the lives of users of this premium product by selling them a more natural milk that has no additives such as permeate and may improve the lives of those who suffer post dairy discomfort. The market for A2 is now global and has reached the UK.

We all know about A2 milk. There are however other untapped opportunities in the Guernsey such as the much-noted natural golden colour of its produce that may have future importance.

All these positive attributes offer wonderful prospects, but only if commercial dairymen want to milk Guernseys and, more importantly, stick with the breed.

Modern dairymen want 'invisible' cows. Cows that produce well, go through the parlour each day and do not give trouble. They want productive, fertile, healthy cows and they want a reasonable and diverse supply of good quality bulls available.

We must ensure that our breed has these attributes before we can capitalise on any niche market.

THE POTENTIAL FOR A GREAT FUTURE

The Guernsey breed has the potential to achieve all the requirements of a sustainable programme but only if we are prepared to make the necessary changes, changes that have been advised for some years now but which we have been slow to adopt.

Like you, I believe that we have the finest dairy breed in the world. We have great people working for our breed associations and we have the best scientific backing that we could possibly hope for. These people are there to help you to make the changes that will ensure a really exciting future.

Failure to change now will mean that we will end up where we are presently going. In short, we have a lot to lose and also an opportunity to improve our fortunes, see the Guernsey flourish in numbers and regain the place that is presently slipping away from us in the commercial dairy sector.

Guernsey is immensely proud of its icon dairy breed. Our people, government and farmers stand foursquare behind it. We have a deep interest in the commercial fortunes of our Island and its cattle. For centuries Guernseymen have had to adapt and change in order to survive. That applies to our cattle just as much as to any other aspect of island life.

I would like to put on record my thanks to the numerous animal scientists who have given their time to help the Guernsey breed over the past three years and in particular, Dr. Maurice Bichard, the WGCF Consultant, Dr Janet Roden, Professor Jan Philipsson, Dr. Marco Winters of UK DairyCo, Dr. Mike Coffey of Egenes, and Professor John Woolliams of Edinburgh University.

The speakers at this Conference have given their time and knowledge for the benefit of the Guernsey breed. They have done so willingly and our thanks are due to them all.

Finally grateful thanks is due to our own RGA&HS President Ray Watts, Secretary Liz Naftel, Carolyne Cree of Field Farm Tours and the team of helpers who have put together a superb Conference package. We hope that you will continue to enjoy the Islands, their unique scenery and history and of course the herds that you will visit during the coming days. Above all we hope that you will take home pleasant memories to cherish in the future.

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