The Royal Guernsey Agricultural & Horticultural Society

Report to the 15th World Guernsey Conference

SLIDE 1
The Royal Guernsey Agricultural & Horticultural Society is pleased to report a very positive three years activity since the 14th World Guernsey Conference.

SLIDE 2
THE ISLAND HERD including Alderney
There are fifteen herds producing milk for the Guernsey Dairy, one herd that serves Alderney and a number of small herds mainly rearing purebred heifers and beef cross animals.

Herd composition at 31/12/2015
The 16 dairy herds comprise 1,601 cows of which
546 are first lactation heifers
315 are second lactation cows
258 are third lactation cows
209 are fourth lactation cows
273 are cows in their fifth or subsequent lactations

SLIDE 3
The herds also contain 1,097 heifers in the following categories:
468 < 1 Year
457 1-2 Years
172 2 Years+

SLIDE 4
REGISTRATIONS - 2015
Registrations recorded in 2015 were:
Pedigree Female 508
Pedigree Male 26

SLIDE 5
AVERAGE 305 DAY PRODUCTION 2015
840 Cows: 6,303kgs Milk, 324kgs 5.13% Fat, 227kgs 3.60% Protein, **F+P 551kgs**
296 Heifers: 5,714kgs Milk, 291kgs 5.09% Fat, 205kgs 3.59% Protein, **F+P 496kgs**
Calving Interval: Since 2012 the Island calving interval has fallen from 423 days to 418 days in 2015, an average of 1.5 days per year.

SLIDE 6
The Alderney herd is our leading production herd
Mike Cox of Kiln Farm, Alderney has developed a really outstanding herd in terms of both production and conformation.

21 Cows avg: 7,287kgs Milk, 378kgs 5.19% Fat, 263kgs 3.61% Protein, **F+P 641kgs**
5 Heifers avg: 7,035kgs Milk, 317kgs 4.51% Fat, 248kgs 3.52% Protein, **F+P 551kgs**

SLIDE 7
The Leading Animal for Fat + Protein Production
Is owned by Mr. Frank Le Cheminant
Adamsons Hettie 3:

5th Lactation: 10,863kgs Milk, 592kgs 5.45%Fat, 366kgs 3.37%Protein, **958kgs F+P**

SLIDE 8
Outstanding Herd
Les Jaonnets Herd owned by Mike Bray is a herd of outstanding performance and conformation. The herd has a block calving policy and makes maximum use of grazed grass.
86 Cows avg: 7,141 kgs Milk 373 kgs 5.23% Fat 260 kgs 3.65% Protein, F+P 633kgs
22 Heifers avg: 5,833 kgs Milk 308 kgs 5.28% Fat 214 kgs 3.67% Protein, F+P 522kgs

SLIDE 9
The Guernsey Global Breeding Programme
RGA&HS is fully committed to the programme. 68% of registrations are now sired by GGBP Bulls

For some 12 years we have used the Guernsey Merit Index and subsequently GMIF (GMI with an added Fertility weighting of *25) as our primary sorting index.

In the spring of 2014 the Herd Book Council decided to adopt the New Guernsey Profitable Lifetime Index as the natural progression from GMIF.

As time has progressed, we are measuring or recording a lot more traits (SCC, lifespan, fertility) and have standardised our type assessments. Complex statistical methods and increased computer power have enabled scientists to measure the relationships between all these traits and PROFITABILITY.

New PLI evolved with much consultation between the scientists and industry representatives. Extensive research indicated that keeping smaller, longer living cows should increase profit more than chasing maximum yield. This struck a chord with Island herd owners based on their own experience. Island breeders had recognised for some time that we needed to tighten our Calving Interval and desired longer Herd Life together with an improvement in all fitness traits.

Analyses suggested that such a move would increase the rate of genetic improvement in virtually EVERY goal except yield. But of course yield would not decrease, merely improve a little more slowly.

SLIDE 10
Heifers sired by GGBP Bulls have better evaluations than those sired by other bulls.

SLIDE 11
Cows sired by GGBP Bulls have outperformed those by other bulls.

SLIDE 12
What our breeders expect from GGBP in the future
- Improved Female Fertility
- Diversity of pedigree
- Healthy cows of moderate stature
- Further improvement in functional type
- Cows that are easy to manage

SLIDE 13
What we are doing about this

- Use of Profitable Lifetime Index
- Selection using PLI will increase the rate of genetic improvement in every trait except Milk Yield which will improve a little more slowly.
- However selecting for smaller, longer lived cows is expected to increase PROFITABILITY

Slide 14
DIVERSITY OF PEDIGREE

It is now four years since we commenced using the EVA Optimum Contribution Model for our Planned Mating Programme to provide eight new young sires per year. This software, available free of charge from Nordgen, delivers matings of the highest genetic merit (PLI) for the lowest inbreeding coefficient. It is early days to reach definitive conclusions but the rate of increase in inbreeding is currently 0.04% per annum. The level of inbreeding in the Island population is 4.2%. Increase in inbreeding is a natural consequence of improvement in genetic merit but we are now able to control this while seeing significant gains in PLI in our young cattle.

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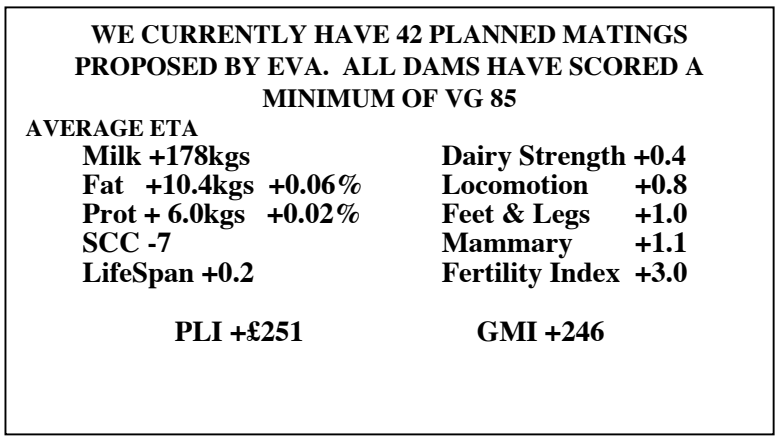
We currently have 42 planned matings proposed by EVA, all from high indexed cows that have scored >85 points Final Type Score. These cows will supply 8 bulls per year for random release across the Island population. 2 unrelated bulls are released quarterly.

As can be seen from this slide, it is possible to simultaneously achieve high rates in PLI and GMI.

Figure in slide 15



We are confident that use of PLI and EVA will result in a sustainable future for Island Guernseys.

We also believe that continued emphasis on health traits such as female fertility and somatic cell count, coupled with our breeders' desire to maintain Dairy Strength and avoid extreme stature, will result in healthy cows that have shorter calving intervals and are easy to manage.

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Future collaboration with other populations

Unfortunately changes in UK regulation are making it impossible for us to export semen, embryos and live cattle to UK, Europe, North America and Australasia. We are attempting to resolve this issue but it seems that a solution may be some years away.

We will continue to seek bulls of unrelated pedigree from other populations where breeding values are available for conversion to ensure that they meet our selection criteria.

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Genomics and Island Guernseys

In 2012 the European Union (EU) decided to offer help to all Europe's minority breeds through a research consortium Gene2Farm (G2F). Funding was provided to obtain 1500 cow genotypes using tissue from the Island's current cows, and some 200 current and historic bulls from semen. Researchers in several countries supervised the work and these funds supported them in exploring new statistical approaches to try to overcome our data shortfall. This project concluded in December 2015. We hope to have GEBVs for all bulls in the worldwide breed from April 2016 and that these will be more reliable predictors of true breeding value for young bulls than our existing EBVs. Depending upon the actual lift in accuracy this should enable us to provide an even better panel of bulls each year to sire the majority of replacement heifers, and to help choose which females to retain.

In addition, by more efficiently calculating the relationships between the candidate young sires and the Island's cow population, we should be able to control the rate of loss of genetic variation in our cattle due to inbreeding. This loss is an inevitable consequence of selection in a small population.

We intend to develop a Guernsey Island genomic library. This will contain sample DNA information from our entire cattle population starting from those present in early 2014. We will use the 7K chip to assess these females and all subsequent calves. The much smaller number of bulls will be genotyped with the 150K chip.

We have currently genotyped 2,100 Island Guernseys. All calves are sampled by taking tissue from the ear at tagging and we are gradually catching up on the heifers that were missed in the early round of sampling.

As with all libraries, accuracy will grow as we accumulate more records. In addition to providing more reliable early predictions of breeding value for all traits (especially fitness), it will allow the investigation of specific gene effects. Our good friend Dr. Sophie Eaglen has already arranged for analyses to see if any major genes are associated with the breed's loss of female fertility. If this could be established, then we would have a more direct way of tackling these problems by targeting the genes directly.

We anticipate that our library will be supplemented by comparable data made available on a reciprocal basis from other Guernsey populations, particularly in USA and UK. It is not yet clear what volumes of records these countries will create.

Investment in a complete Genomic Library for Island Guernseys is a large financial commitment for a small group of farmers who already operate in a high cost remote island community. Yet Guernsey farmers and RGA&HS know that as custodians of the breed that bears the name of their island home, they have a responsibility to preserve and enhance their cattle as a world farm animal genetic resource. All agree that the best way of achieving this is to ensure a profitable and sustainable future for the breed and all hope that this future will see the breed regain its place in the world dairying industry.

Slide 18
The Royal Guernsey Agricultural & Horticultural Society is committed to:

- The Guernsey breed
- GGBP
- Care of the environment
- Excellence in all we do.

SLIDE 19

Thank you