Royal Jersey Agricultural & Horticultural Society

Patron: Her Majesty The Queen

Submission to the States of Jersey Corporate Services Scrutiny Panel,
Bovine Semen Import Sub Panel in May 2008

Importation of Semen P.43/2008

The Agricultural Council of RJA&HS is unanimously in support of the proposition P.43/2008 to enable the importation of bovine semen. This submission puts further detail on the pamphlet published by the Society in February 2008 (appendix 1) and supplies the evidence that semen importation is necessary to improve the genetic merit of the Island's herd of Jersey cattle in order to remain competitive in the breeding of improved dairy animals and milk production.

There are four main strands of reasoning for allowing importation of the best Jersey genetics available:

- **To improve the Jersey cow in the Island**, which will be expanded upon further within this submission.
- **To improve farm efficiency**, which will also be expanded upon further in this submission.
- **To support the majority of farmers, who wish to import semen**. The most recent poll indicates that 53% of producers are in favour (15.5 of the 29 producers), who farm 72.5% of the cows (2,236 of 3,084) and produced 76.4% of the milk delivered to the Jersey Dairy in the last year
- **To complete a key part of the industry recovery plan** which is dealt with by separate submission from the Jersey Milk Marketing Board.

Other issues that have been raised by commentators have also been addressed in this submission.

Historical background and legislation:

By way of introduction it is important to understand that the Jersey, like all other breeds of domestic livestock, is not a naturally occurring animal or a separate species but is the result of selection by cattle breeders using several strains of cattle and more recently breeds in an attempt to alter the animal to develop traits that are beneficial, and eliminate traits that are undesirable. This takes place in a dairy farming environment that must provide a financial return to enable farmers to continue farming and cattle breeding.

Statements have been made that "the Jersey cow does not belong to the current group of farmers" and therefore why should their wishes be considered. It is a simple fundamental truth that unless the dairy industry is profitable there will not be an Island herd of Jersey cattle.

The Jersey has been developed from a number of sources of livestock and indeed there is reliable anecdotal evidence that admixture has occurred within the last 200 years and is reflected by the various amendments to the legislation over time (appendix 2).
Statements have also been made that it is unnecessary to import semen as there is no inbreeding now and sufficient genetic diversity. This is a result of the confusion between the aims of 'conserving' a population, for example in wild animal species, and the very different need to 'improve' a domestic breed of livestock. Conservationists claim to be able to maintain complete genetic diversity with as few as 200 individuals, and this may be so but it ignores the fact that the issue of maintaining a viable population of domesticated farm livestock is not about 'conservation' but the very necessary aim of improvement.
This improvement takes different forms including productive, economic and welfare traits within the population. If agriculturalists stop improving their stock they undermine the future profitability of their farm businesses when faced with competition from producers who make consistent improvements.

Improving the Jersey cow in the Island:
The single most important development in the early history of the breed was formation of the Jersey Herd Book in 1866, 142 years ago, which can be described as the birth of the 'pure' Jersey. This is the official registry, administered by the RJA&HS, which is the guarantor of pedigree and thus purity. It is upon the basic principle of accurate identification that all programmes to improve the breed are based and herd registers around the world are formed along similar lines.
The Jersey Herd Book Rules were amended in January 2008 to accommodate any potential importation of semen and ensure that the integrity of the pedigree status of the Island herd is maintained (appendix 3).
The key inclusion is that the Society would only allow registration of an animal into the Herd Book if its dam (mother) was born in Jersey and its sire (father) is registered in the Herd Book. Registration of a bull not born in Jersey (i.e. seeking entry due to imported semen) will only be allowed if he has at least a seven generation pedigree, registered with an official registry of the status of the Jersey Herd Book, and have no known ancestor of any other breed. This can be determined by modern DNA testing which has an efficacy rate in excess of 99% (appendix 4) and any semen imported would be tested to establish its authenticity and require certification from the registry of origin.
It is through this mechanism that the purity of the pedigree Jersey herd in the Island can be maintained whilst allowing cattle breeders access to the best Jersey bulls with which to improve their herds.
Use of imported semen would be voluntary and the Society maintains sufficient cryogenically stored semen to maintain the breeding of herds indefinitely for those who do not to wish to use imported semen.

There are people who disingenuously suggest that pedigree registers in other countries are in someway 'unreliable' or 'untrustworthy', this is simply not the case as breed societies around the world take their responsibilities as seriously as the RJA&HS does. It has further been asserted that their Jerseys are somehow not 'pure' as they include other breeds bred up to be pedigree. The pedigree status of a registered Jersey in the Island is the same as that in the USA, Canada or any other country, in that its pedigree can be researched and established. The recent inclusions in the Jersey Herd Book rules would specifically eliminate any so called 'graded up' animals.
The populations of Jersey cattle in other countries originated in the Island but the reason for their success is down to the simple laws of population dynamics - the bigger the population the more likely it is that an extreme example of a beneficial trait is seen and can then be used to parent the next generation and so on. The science behind this is inescapable.

The practice of importing the best pedigree Jersey bulls through their semen is to bring back genes that were exported from the Island over previous generations. Indeed it should be realised that the Island does not have a closed herd, in the true meaning of the description; it has a 'half open' herd as a stream of genetics has left the population over many years.

The Society has implemented a number of breed improvement initiatives over the years, including improved milk recording, linear assessment of physical traits and classification, contract mating and embryo transfer and not least the Jersey Bull Proving Scheme as recommended by Dr Allan in 1987 (appendix 5). These initiatives either dealt with the collection of information or utilisation of information to achieve improvement.
The Bull Proving Scheme has been running from 1988 and the Society still presents young bulls for testing today. In 1993 Dr Allan undertook an analysis of the success of the scheme and amongst his conclusions was that the annual rate of genetic improvement of the local herd by using imported bulls (expected to be at 0.82% per annum) would be twice that if not using imported bulls (expected to be at 0.4%) (appendix 6).

In 2003 the RJA&HS commissioned Dr Bichard to advise on the 'Sustainable development of the Island's dairy cattle' following a large reduction in the Island herd between the years 2002 and 2003 in the order of some 20%, or just under 1,000 cows.
Dr Bichard calculated that there had been modest gains in milk yield from 1989 onwards of some 0.6% per annum but these need to be set in the context of gains in the genetic trend for milk yield of the UK Jersey population of some 1.8% per annum, three times the local rate (appendix 7). He concluded that "*the RJA&HS should recognise that it cannot operate an internationally competitive closed breed improvement scheme of the Island's cattle. It would be of benefit to Island farmers and their customers if importation of Jersey breed semen were permitted.*"

It is this faster rate of genetic improvement that now sees the UK milk recorded Jersey population average some 20% more in yield than Island Jerseys (appendix 8), either in total volume of milk or yield of butterfat and protein.
Some question has been raised over the validity of these figures, although this is unfounded in light of the fact that the UK Jersey population is subject to the same environmental and management regimes as those in the Island and the concentrated cattle feed fed to both populations is even produced in the same mills. In fact the Island has the advantage in forage production due to the more benign climate and longer growing season with higher sunlight hours available for growth and use of the same varieties of crops. Some have claimed that the Jersey farmer and cattle breeder is not able to compete with a UK farmer, for example in terms of the ability to grow high quality forage. The RJA&HS would dispute this and recommend that should the Panel seek confirmation of the abilities of local producers they should refer to the States of Jersey Livestock Advisor, John Jackson, for his independent opinion.
In relation to the actual comparative figures it should be noted that the entire Island herd is milk recorded, i.e. a complete data set, whilst the UK population is only partially milk recorded, although still in complete herds and is <u>not</u> selective as some people imply. The data set from the UK however includes some 15,000 animals, in excess of 60% of the population, and thus any difference in the data set is not significant in light of the overall numbers involved.
Indeed the NMR top production Jersey herds in the UK produce in excess of the top Jersey herds in the Island, in volume terms by 40% and by 46% in milk solids, (appendix 9). It is important to understand that it is <u>average</u> production that is the important measure not the performance of individual cows as the target is to improve average production efficiency of the population. People point to some outstanding production cows in the Island today but the ability to translate an individual's performance into an improved average has been elusive due

to reliability issues of data in a small population combined with the desire to avoid over use of any individual's genes within a small herd.

Jersey Island Genetics, the trading arm of the Society, launched an international programme to test the breeding value of Jersey Island bulls in different countries and environments during the late 1990s. The results from this (appendix 10) clearly demonstrate the extent to which Island breeding has lagged behind the major populations around the world and explain why there is no commercial market for semen from Island bulls.
The stud of eight bulls, representing a cross section of Island bloodlines, were on the whole positive for production traits in the Island, however, their performance, based on actual daughters milking in these conditions, ranged from –ve 188 kg of milk in the UK to –ve 2,007 kg of milk in Australia.

There has been some comment on the relevance of Dr Bichard's report in light of a research paper published in 2004 (after Dr Bichard) by Lounes Chiki who had undertaken some experimental work on the DNA of domestic livestock. What has not been made clear is that the 'Chiki Report', whilst published in 2004, was based on research, assisted by the RJA&HS undertaken in 1999 (prior to Dr Bichard), and also that of the 37 herds sampled in 1999 (out of 62) some 15 have since been dispersed and exported to the UK.
Demonstrating that the 'Chiki Report' is superseded by the Bichard report is relevant in that Chiki only considers importation as being unnecessary as a means to avoid inbreeding. It has already been demonstrated that the issue is not the avoidance of inbreeding now but the inability to keep up with rates of improvement and the risk of future inbreeding in a small population if subject to the highest possible intensity of selection pressure which, in itself, would still not be enough to keep up with global rates of improvement. The Island must not be seen as some isolationist protectorate immune to international trends, the modern dairy industry is a global one.

To improve farm efficiency:
The JMMB in its separate submission makes it clear as to why the need to improve efficiency is so important and how importation of semen is a key part of their plan for recovery. On the assumption that there is a shared desire from all parties to see a sustainable Island herd of Jerseys graze local fields and supply milk and products then it is vital that the herd and its processing capacity is as competitive to imported products as possible. To maintain a less efficient herd would either require greater retail prices than would otherwise be the case or greater government support.

The financial benefits of more efficient genetics have been demonstrated by the States of Jersey Livestock Advisor in his report (appendix 11) which models the effect on an average herd and shows a financial benefit of some 3.7p per litre in milk production alone, without accounting for any potential of increased sales from livestock.

The effect of improved genetics in terms of farm efficiency and therefore improved economics of milk production have been well shown through a number of long running experiments around the world including the Randleigh Herd in North Carolina, USA, and the Langhill Herd of the Scottish Agricultural Colleges. At the SAC Dairy Cattle Research Centre they have been breeding their Langhill Herd since 1970 selected in two groups, as a high genetic merit line and a control line.
These cattle are again selected in two groups on different management systems; a high home-grown forage system and a low forage system relying more on purchased feed. The improved efficiency is clearly demonstrated in their results (appendix 12) which show that the high genetic merit cows produce the same volume of milk per year but using 1.5 tonnes per lactation

less concentrated feed than the control group. Improved genetic merit cows do not necessarily mean producing more milk, it is this improved feed conversion efficiency is of vital importance in reducing the cost of milk production.

Traditionally a significant source of income for dairy farmers in the Island was the sale of surplus heifers overseas for breeding stock, and in its heyday was an important industry for the Island in its own right, with up to 2,000 head of cattle being exported in a single year. In the early days large scale exports helped to build populations in new countries but this changed into repeat business for the best examples of the breed to improve international populations.
This industry has collapsed since the Second World War as the breeding value of Island cattle is no longer valued by breeders around the world (appendix 13) and the growth in AI making it easier to improve populations through the transfer of semen from top bulls. The five year average of cattle exported from 1946 was 1,800 head but by 1995 this had fallen to 87 head, and even this is inflated through the inclusion of an exceptional movement of an entire herd relocating to the UK.
The outbreak of BSE in the late 1980's had an effect but relatively minor in the overall trend, and the residual base of the export trade is the occasional cow being bought for show purposes.

This decline in cattle exports needs to be seen in the context of a period of exceptional growth for the breed around the world and especially in the UK, traditionally the Island's closest market, where Denmark have exported over 11,000 head in recent years. Current market prices for average Jerseys in the UK range from £1,200 to £1,500, a price at which it would be attractive to rear surplus heifer calves for export, however local cattle are not achieving these prices due to their low breeding potential and productivity.
In Jersey some 700 heifer calves per annum, not needed for herd replacements, are culled at 24 hours of age. These, with the right breeding, could be sold as export breeding stock and provide additional income for the farm, the number of heifers exported could be further enhanced by the use of sexed semen reducing some of the 1,400 bull calves per annum currently also culled at 24 hours old. In an age of food shortage it is a shocking waste that we in the Island are the only Jersey population known to be doing this.

Other issues:

The veterinary risk of importing semen:
Some comment has been made of the risk of importing disease into the Island through imported semen. Veterinary opinion on this is clear, both from an official government stance and private practitioners, that there is very little risk of importing any disease through frozen semen where the recognised protocols are being followed. These protocols are under strict veterinary supervision, and for Jersey this would fall under the remit of the States Veterinary Officer, Linda Lowseck, and it is recommended that the Panel make contact with her should there be any specific queries of this process.
Risk assessments of the potential of disease transmission have been carried out (appendix 14) and these form the basis for the internationally accepted approach to minimising risk by maintaining an ultra high health status in bull studs where semen is collected. The standard adopted by the EU in this regard is laid out in Council Directive 88/407/EEC, as amended, (appendix 15) and millions of units of semen have been successfully collected and traded to these standards.
The RJA&HS contend that the greatest threat to the Island herd from imported disease is likely to come naturally through wind born virus, for example Foot & Mouth Disease.

Guernsey - A close parallel:
The Guernsey situation has been dismissed as 'different', however we would maintain that it provides a very good parallel to the situation Jersey. In Guernsey, albeit for different reasons, the importation of genetics was allowed some 30 years ago. Today it is widely recognised within Guernsey that this was a positive step forward and now the Island plays a leading role in the development of the breed around the world. The only milk producing cattle in the Island are of the Guernsey breed, their local milk market is supplied by the local herd and Guernsey people are just as proud of their herd and its heritage.
In addition, although semen import is not restricted to just the Guernsey breed some 70 beef cross animals are raised each year for the local beef market without affecting the integrity of the pedigree Guernsey herd in any way. Interestingly the NMR data on the Guernsey breed referred to above (appendix 9) records the top two British herds as being in Guernsey and the third best being in Alderney.

The poll of dairy farmers:
There has been question raised as to why the Council has not polled the members of the Society on this issue and the answer is very simple. The leaders of the dairy industry, in preparing the 'Road Map' plan for recovery delegated by the lead role in researching this subject to the Council of the Agricultural Department of the RJA&HS as it is the acknowledged source of expertise in this field. The issue is clearly of particular importance to the current dairy farm businesses (being some 29), as compared to the broader membership of the Society (being some 700 individuals), as it is the profitability and livelihood of those farm businesses that will be affected by any decision on the issue.
It was for this reason that a poll of the dairy farm businesses has been undertaken on three occasions over the last 18 months and the last poll indicated that 53% of producers are in favour (15.5 of the 29 producers), who farm 72.5% of the cows (2,236 of 3,084) and produced 76.4% of the milk delivered to the Jersey Dairy in the last year (appendix 16).

The opportunities resulting from importing semen:
The evidence is clear that Island cattle have fallen behind Jersey populations around the world in productivity and efficiency, and as a result there is an inherent comparative inefficiency in milk production in the Island and a loss of export sales.

It is important to recognise that the cattle breeders most in favour of importation today are those that have done the most to encourage breed improvement in the Island over the last 25 years and they remain committed to improving the Jersey breed in its Island home. Despite the current situation, those most committed to the breed believe that should semen import be permitted the following will result:

- The Jersey breed in the Island would again become world leading in quality and, as a part of the global cattle breeding community, excitement and interest in cattle breeding in the Island would be rekindled.
- The efficiency of milk production on farms would improve, and with this farm profitability, securing a future for the industry and with it the Island herd.
- The ability to re-enter the export market providing additional revenue to the industry and economic growth.
- The ability to meet the long terms needs of consumers for milk and products in the Island and continue to fulfil a key role in managing the Island's countryside.
- The Jersey herd in the Island will not change in appearance to the casual observer but proposition P.43/2008 creates choices for cattle breeders to help enable them to secure a future without imposing any obligations.