

CrazyCow In Print extra - The future of red breeds internationally

Former Queenslander Doug Savage (of Venvale Illawarras), who now works for Holstein International and lives in Canada (for the last two decades), returned to Australia to judge the Illawarra show at International Dairy Week in January. He also presented a paper at the world Illawarra conference. His address circled the decisions Illawarra breeds face moving forwards and he talked about how he sees the equation. He also answered some questions from CrazyCow's Dianna Malcolm regarding the Illawarra show at IDW. Click here for that story OR click on "read more..." (listed below) for Doug's World Conference presentation...

Canadian judge Doug Savage

World Illawarra Conference keynote speech

by Doug Savage

A review of global dairy cattle numbers makes for interesting and at times surprising reading.

While most people would think of western Europe and north America as the world's leading dairy producers, these regions are far from having the largest dairy cattle populations.

By a large margin the leading country is India, with around 82 million head, followed by Brazil with 15 million. China has the fastest growing population, now at 10 million and currently surpassing the US.

A large portion of the world's dairy cows are in economically developing countries, have low level production per animal, and are generally in tropical and sub-tropical regions.

When it comes to the need for improved genetics and better livestock management, these countries represent the future markets of the world. Most regions in more temperate climates already have highly developed and competitive markets when it comes to livestock genetics. This point is very relevant when setting the long-term breeding goals for the Illawarra breed. What the world will need in the future is a high performance animal that has good fertility, good calving ease, is resistant to the eye and skin cancers that plague the Holsteins in tropical climates, and is generally adaptable to the hotter environment.

Because of the perishable nature of dairy products, around 94% of the world's dairy production is consumed within the country it is produced with just 6% traded internationally, half of which comes out of New Zealand and Australia. That scenario is not likely to change, with the burgeoning human populations in these developing countries requiring dramatic improvements in their own domestic dairy industries.

A good measure of genetic improvement programs around the world is to look at the numbers of young sires tested annually through structured young sire sampling programs. Here the Holsteins set the pace for genetic improvement with well over 6000 bulls sampled annually around the globe.

The dual purpose red breeds, usually based on Simmental bloodlines, follow with around 1200, while the red dairy breeds test 500, and the Brown Swiss and Jersey breeds around 400 each.

If we look at the individual red dairy breeds we see that the Scandinavian countries – Norway, Finland and Sweden – have each sampled around 100 per year, and by an interchange of genetics between them, together with adding a little North American Ayrshire, have been able to maintain good genetic gains without use of red Holstein

blood. Most other countries with smaller numbers – such as the Danish Red and the German Angler – have found it necessary to make significant outside infusions including red Holsteins.

Over the past few years as interest in cross-breeding has gained attention, the red dairy breeds have gained a golden opportunity. Accordingly, both the Danish Red and the Angler have ceased the addition of further red Holstein genes so that they can join Sweden, Norway and Finland in being seen as a cross-breeding alternative for use over Holsteins. With the Swedish Red bull Peterslund having now sold over 700,000 doses, generating tens of millions of dollars in revenue, the stakes are high.

However, it certainly remains to be seen if crossbreeding is just a passing fad or if it will become a long-term industry practice. I see it as a window of opportunity for other breeds to gain market share, and the various breed comparisons have certainly made commercial producers aware that while the Holstein has a long lead on production, it does not have such a large lead when it comes to efficiency or even profitability.

Which ever way the crossbreeding scenario plays out, I don't see international countries looking to an Illawarra breed that samples 5 to 10 bulls per year as a major source of outcross genetics. To me the goal of producing a cow that can improve the genetics of the much larger population in the tropics is a much more viable long-term objective. To take a somewhat different path to some of the other red breeds may ultimately have advantages.

Why does the number of bulls sampled matter so much? Well every animal receives two sets of genes, one from the dam and one from the sire. Any group of progeny can be mapped on a bell-curve, with most located near the centre, an average of the two parents, but with a few outliers – one that was lucky enough to get only good genes from each parent, and of course one at the other end that got only poor genes. Almost all the truly great animals that drive genetic progress were lucky enough to be a long way above their parent average. Scientists use the term Mendelian sampling to cover this lucky inheritance. A skillful breeder can make mating decisions that produce animals that have the right balance of traits, but no-one has control over which mating will produce the lucky animal that gets only the best genes of both parents. That's why bulls go through a progeny test program so as to identify the lucky ones.

In general terms, about one in ten bulls sampled should be good enough to continue use, but only about one in a hundred will be way above parent average and have a truly exceptional proof that should make him a sire of sons. That's why over the past 10 or 15 years the bulls Prince and now perhaps Monarch have been the only bulls the breed has produced that really deserve significant use as sires of sons. You simply don't sample enough bulls to find those exceptional ones very often. However, with your open herd-book policy, you have the opportunity to use sires of sons from other populations, populations that are large enough to be making competitive genetic gains.

Judging from yesterday's show, the Illawarra breed has certainly come a long way over the last 20 years or so, by using an infusion of outside blood. The improvement in udders, the consistency and depth of the classes was most impressive. Over recent years many international judges attending DairyWeek have returned to North America raving about the quality of the Illawarra display.

But the improvement does go much further than just the appearance of the cattle. If we look to your national breed production averages over the years you will see that the only breed to have greater production gains than the Illawarra has been the Brown Swiss, a breed that is still getting established in Australia.

Most notably the Illawarra is somewhat ahead of the Aussie Red, the other red breed built on an Illawarra base but focusing more on European red breed bloodlines. However, the Aussie Red does have slightly better fat and protein percentages. The column I want you to look at is the lactation length, which for our purposes we can use as an indicator of cow fertility. It is certainly not a surprise that the Holstein, with its widely publicised poor reproductive performance, has one of the longest lactation lengths.

At the other end we have the Jersey, well known for its good fertility. Right there at the same level as the Jersey is the Aussie Red, while the Illawarra is about half-way towards the Holstein figure. It stands to reason, if you use a significant Holstein infusion you are not only going to benefit from its superior performance but you will bring in some of its weaknesses too. It's a warning sign. To continue on and use more and more crosses of red Holstein will eventually give you a Red Holstein breed. And given your smaller numbers, you would not be particularly competitive with the much larger populations of Red Holsteins that already exist in other countries.

To me it's a question of striking the right balance, of capitalising on the improved performance, but also ensuring that you improve the traits that will make you a more viable breed for the tropics – better fertility and calving ease, better skin pigmentation to avoid eye and skin cancers, and general hardiness to withstand the heat. You can have too much of a good thing. The history of livestock breeding is littered with examples of people who thought that since one cross was good, two or three more crosses must be better.

When the Australian Poll Hereford breed first saw the progeny of the imported American bull Beartooth Advancer 12H back around 1980 they were amazed. They were a foot taller and two feet longer than the thick, lower-set cattle that Australia had before. The results were so impressive that they followed it with another and then another cross of American blood. By then the cattle had so much frame that they didn't have the thickness to fatten in the paddock and required concentrate feeding to finish. With the extra bone and size they had calving difficulties, a real problem with paddock calving. Had they been a little more patient and gone back and consolidated their gains in size by adding back more thickness and muscling they could have better capitalized on the advantages of the introduction and still maintained a breed better suited to the Australian environment. So how do we go about consolidating gains?

To me the key is to worry less about what the source of genes will be, and to concentrate more on setting breed goals and then using whatever genetics will help get you there. If improving the fertility along with the performance is a goal, then use the genetics that can make that happen. To go back to use a 'traditional Illawarra' might help the fertility but the performance will suffer – and we really don't want to go back there.

There has been no bull with a 'traditional Illawarra' pedigree emerge with a competitive proof over the past decade or two. And if one hasn't appeared in that time it certainly won't in the future as the infused bloodlines have moved ahead while the traditional lines have not had enough numbers to drive competitive genetic gains.

Indeed, even sampling a 'traditional Illawarra' pedigree today is simply wasting a sampling space. Cattle breeds are always in evolution and you can't go back or even stand still. The concept of using the best genes from whatever source to reach breeding goals is not new. One of the early Illawarra breeders is quoted as saying that 'a good Illawarra is a red or roan Shorthorn with as much Ayrshire as can be hidden under its Shorthorn skin.'

The modern version of that after seeing the cattle yesterday is 'a good Illawarra is a red or roan Illawarra with as much Holstein as can be hidden under an Illawarra skin', and in some cases it is not quite so well hidden.

However, the performance of your breed has come a long way. If we go back further in history to the 1700s, it was red and white cattle from Holland, forerunners to the Holstein, that went to England and became the basis of the Teeswater cattle. The Teeswater had a heavy influence in the North Country English Dairy Shorthorns, and also formed part of the basis of the Ayrshire breed. Breeds are always in evolution and genetic infusions are not new.

So if a 'traditional Illawarra' is not going to have the performance to help, then we need to create some alternative bloodlines that can help the fertility without costing us performance.

You could make use of the significant advances made by some of the European red breeds to create bulls to suit your cause. It's a case of finding the right balance of bloodlines to get you to the breed's goals. Looking through the red breeds you will see significant genetic linkages tying them together, and a couple of bloodlines stand out as excelling across all these breeds. The Swedish bull T Bruno may not produce many that could stand out there at your show, but he is a dominant bloodline that you could work with.

Of his Swedish sons I think B Jurist may suit you better than Peterslund, with better udder attachments and more body capacity. But an option with better type could well be the T Bruno son from the Canadian Ayrshire breed, Duo-Star Normandin, an all-red bull backed by the great type bull BB Kellogg and then a Heligo from one of the best production families of the breed.

Or you could look to the Danish Red breed, which again would give more of the type you seek, and would give you more strength and substance of bone. The top Danish Red bull, Bangkok, is a constructor bull that would give you lots of width and capacity with strong bone and great udders, though pins can be high. He is sired by T Fjembe, a son of the red Holstein Momentum, with the dam being a T Bruno out of a daughter of the Danish bull Mabru.

The number 2 and 3 bulls in Denmark are both sired by Fyn Aks, another Momentum son. R David is also from a T Bruno out of a Mabru, while R Degn is the breeds top milk bull and is out of a Ladby with the next dam being a T Bruno. So there are a number of ways to access the T Bruno bloodline, and in many cases much of the work of improving the type to make it into the kind you want to work with has already been done.

The other bloodline that stands out is Backgard. He left more compact cattle but with better udders and good functional traits. His best son is the Swedish bull Orraryd, who appeals to me as his dam is sired by the Danish bull Mabru and so brings in that better type and stronger bone. Another son of the same cow, Brolin, is at the top of the Swedish list but does not leave the impressive udders. I judged the dam of these bulls at the Swedish National show back in '99. Orraryd is a 2nd crop bull and the most consistent udder bull in their breed, and also scores very well for temperament, something to watch with these breeds. To me breeding sons of Orraryd, or the Danish bulls, or the Ayrshire Normandin, would give you genetic options.

I can see that using your x, y and z genetic introduction program to try to prevent the breed from becoming a red Holstein breed has merit, but I see no reason to put barriers in the way of these other red breeds. They are all becoming interlinked and are making significant genetic gains that you can make use of.

If you want to differentiate your breed from a Holstein than these can help you do it. Once you have a good Illawarra cow sired by a red Holstein, you need to have the option to use whatever other source of red you can over her to maintain a balance, and so applying the x, y and z for these other breeds only gets in the way of good breeding sense. I would strongly urge reciprocal rights for these other red breeds. Here I should emphasise that genetic introduction from other breeds is not just about a quick fix for an in-breeding problem. You need to have permanent access to breeding programs of a size that samples at least 100 bulls per year in order to have genetic gains that will be competitive with the major breeds. Most of the other red dairy breeds are now quite interlinked, and you will need to continue to pick their best sires of sons to use on an ongoing basis.

That 100 bulls sampled is not a scientifically supported number, it's just that any breed with less than 100 sampled has struggled to make enough gains over recent decades to survive on their own. So given the Illawarra breed size, you will always need to draw from other red breed programs. That's why I see no value in continuing with the x, y and z limitations to the other red dairy breeds. To me in-breeding has got a bad name, and has become a convenient scapegoat for breed weaknesses such as the poor fertility of Holsteins. Personally I see the fact that we have been intensely selecting over an extended period of time for high production, which is inversely correlated to fertility, as being the major cause of the problem.

Nowadays we have a proof for daughter fertility and can select for it, though correcting the problem will take time. If you look at the pedigrees of most of the great animals in any of the breeds you will find a very high percentage were quite line-bred. In an Illawarra breed with an open herd-book policy I don't think you need get too worried about in-breeding. If one cow family produces a few top bulls then go back and get some more. Differences in genetics coming in from the sire's side will take care of that issue. Back in the 70s many people thought that the Illawarra breed suffered from becoming too in-bred on Sunny-View bloodlines. But I wonder if it wasn't a case that those bloodlines simply didn't perform quite as well as we expected once they were out and used under other herd management conditions across the country.

Perhaps they were not quite as superior as they appeared to be when they were still at Sunny-View. Given your open herd-book status I don't think in-breeding requires much thought; producing superior genetics needs to be the focus. How do you go about setting breeding goals? In the modern breeding industry that is done via the total performance index. Never underestimate how powerful a tool these composite indexes are.

The ranking of the proven bulls directly dictates which bulls will get the most use in the breed. Some national indexes are more effective than others, judging from semen usage patterns, with virtually all the bulls getting significant use being in the top-10 or top-20. Your APR doesn't appear quite as successful, as there are quite a few bulls in the top-10 that don't get much use, at least in your Holstein breed, mostly because of negative udder scores. Most countries

now realize that while these indexes need to be scientifically based, those who milk the cows need to have some input, and such traits as udders need a little more emphasis than the science may support. It stands to reason that if we want the breeds within a country to excel for different traits, then we need to have different total indexes for each breed. Canada has just implemented that approach this year, and the US already has separate total indexes for the breeds. Within the next 5 years I would expect all countries will move in that direction.

So I would urge you to push for, or even develop your own, Illawarra Profit Index, putting extra weight on such traits as fertility, calving ease and whatever other traits you feel are necessary to differentiate your breed and make it more appropriate for a sub-tropical climate. One of the weaknesses in virtually all breeds other than the Holsteins is that while extensive use is made of top bulls, not enough use is made of the top cows for breeding purposes. If I want to buy into the top 10 Holstein cow families in North America I can go to sales almost every month of the year and buy embryos, picks of flushes, or heifers from all the top families. In the Illawarras you have traditionally had to wait for a dispersal sale to access top families from other herds. As in most red breeds very few top Illawarra cows ever get flushed. There is not the market for young bulls to pay for the flushing.

To me this is an area where the Illawarra Society needs to get involved. An ongoing program giving structure to boost use of ET on top cows is needed. It doesn't have to be complicated. If for instance 15 or 20 breeders would put up say \$500 each to get into an embryo balloting program, you could then go out and flush 6 or 8 of the top cows in the breed to the best bulls and distribute the embryos between them. The owners of the cows could be paid with access to other embryos. This would spread the top cow families around a lot more herds, would produce a lot more calves from the top cows that are currently receiving few opportunities, and would generate more bull calves that may potentially be available for young sire sampling.

Having extra genetic linkages between your herds may even help the accuracy of proofs. I think you would find that many of the owners of the top cows would have enough pride in their cow that they would want to see it flushed and have the chance to have progeny perform in other herds. That's the real proof of whether you have a superior cow is if it's progeny will perform in other herds under different management. But the program would need to be structured. There is simply not enough marketing of embryos within the breed to justify breeders doing the flushes of their own accord.

It's important for a breed society to move forward and use the best possible programs if the breed is to be competitive. An example would be the all-breed classification program that has been developed by Holstein Canada. They have put in a huge amount of money to develop a state-of-the-art program, using measurements for as many traits as possible, and relying on the program to calculate a final score. Each breed can simply fine-tune the numbers to customize it to their breed. It is now used by all the dairy breeds in Canada. Small breed associations can't spend that sort of money on developing a program.

It's a case of why waste money trying to re-invent the wheel? The Holstein Association in Australia uses that program. Canada now has all breeds classified with the system, meaning all breeders now get classification visits at regular intervals, and of course the data flow or technical support issues are taken care of. I would like complement your Illawarra Association on its initiatives in the area of young sire proving where you are now working with some organizations that have major international marketing networks. These major AI organizations know that developing markets in some tropical and sub-tropical regions will require a product other than just Holsteins.

A few months ago I completed a request from Semex for an article introducing the Illawarra breed, which was to be used by their sales network in South America. They see your Illawarra breed as having potential for marketing into some of these developing countries, areas where they wish to build a market. If they could get even a modest market for Illawarra semen, it would certainly lead to greater interest from the AI industry in helping you develop the breed. I would certainly recommend that you continue to work with them and do what-ever you can to help them develop that market for you. I should just add a few comments on what I would see as the best sources of red Holstein genes. The way to access the highest quality Holstein blood is to use red factor bulls to breed red Illawarra sons.

While that does lead to some black animals that you don't want, it will give you access to better genetics. The talk of the red factor world is your Australian bull Talent. He is widely regarded as the best udder and rump bull of the Holstein breed, and is in such demand around the world that later this year he should become Australia's first million-dose seller. He is extremely consistent and very reliable with great longevity and fast milking speed. To me, any red son he produces in the Illawarra breed needs to be sampled. September Storm is another red factor Storm son, and the other Storm son I should mention is the Italian bull Ralstorm. He is actually a black/red bull, meaning he was born red

and changed to black. All his calves out of red cows would be born red but half would change to black, a gene you would want to be careful of.

Of the red bulls I know that Advent-Red is going to get a lot of use. He is easily the highest type red bull there has been, and will produce show winners. However, to me his proof does not have enough milk to make him a sire of sons – you would be better trying to work with his best daughter.

They are tall, dairy and sharp with good udders but lack width through the front end and spring to the fore rib. From Europe Poos Stadel Classic-Red is their best type red bull, likely with no more production than Advent, but I like the calves, good width and spring of rib, great legs, more strength than dairy.

One bull I should mention is Aggravation Lawn Boy-Red, moderate production with what will be the best bloodlines for the management traits that you will get from the Holsteins. They have good udders and feet and legs, but lack depth of rib. He should add a little strength to some deep, open-ribbed Illawarra's, and should perhaps have sons sampled. Of interest, he is polled. I know there are one or two good Illawarra families that are polled, so if that is a trait that you want to breed for there are now some options available. The red factor bull Hickorymea Ottawa is a polled bull with high production and moderate type, and then the Norwegian Red breed has a number of their better red bulls descending from the bull Nylokken that are also polled. Of course if you want to be really adventuresome you might even look at adding some tropical red breeds with a Bos Indicus background such as the Red Sindhi from Pakistan or India.

You could add tick resistance and heat tolerance, as long as it doesn't cost you too much in production performance. In summary, the world needs a better dairy cow for the tropics. To achieve that, I think you need to set your breeding goals and implement them via an Illawarra Profit Index. To me any debate over which breed to introduce is not of value – It's a case of finding the right balance to give you the kind of Illawarra cow you need in the future. I would see the only threat to overtaking your genetic pool coming from the Holstein, and so could justify retaining the x, y and z to limit that introduction, but I would recognize all other red dairy breeds with reciprocal rights and let your breeders make the most of what genetics are out there. The continued development of young sire programs with major international AI companies certainly offers you improved prospects for international marketing of semen in the future. And as an Illawarra organization I would definitely move to set up a structured embryo balloting program to make better use of the elite cows, and to better distribute the top cow families around the breed. These steps would certainly help you to produce the kind of Illawarra cow that could have considerable opportunities around the dairy world of the future.