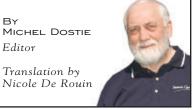
La Revue Holstein Québec







Drapeau et Bélanger inc.

Genomics at its best



he year 2012 marked a change for the owners of Ferme Drapeau et Bélanger inc., when genomics made its grand entrance into their world. Today, Dominic Drapeau says he is extremely satisfied with the results.

The Dragon herd got its start in the 1970s, Marcel Drapeau, Dominic's grandfather, joined forces with Émilien Caron, giving rise to the prefix. The partnership was advantageous, says Dominic, recalling his grandfather's remarks praising Mr. Caron's expertise with cows. A decade later, Émilien Caron and his family launched their own operation, Ferme E.S.M. Caron inc., which is still active today.

Dominic's mother, Sylvie Bélanger, then took on the responsibility of managing the herd of about 90 cows. A few years later, she was replaced by Dominic. "I was eager to take on the job," he recalls. So after a year in the Farm Management program, he began working on the farm full time. That was in 1996, and at the age of 18 he was managing a herd that produced a quota of 105 kg.

Production increased rapidly, and it wasn't long before the barn became too small. The family decided on a free-stall barn, built by the father and grandfather, skilled carpenters. "We had a 20-year plan," says Dominic. "With a building that could house 675 cows." The purchase of two additional herds in 2001 and 2003 brought production up to 253 kg BF/day. Up until the 36-cow carousel was installed, on 1 February 2003, the cows were milked in two barns.

FERME DRAPEAU ET BÉLANGER INC.

Number of animals: 1345, including 700 lactating cows

Quota: 1026 kg BF/day

Average production per cow: 11 996 kg of milk, with 3.98% fat and 3.32% protein

BCA: 260-263-262

Average daily production: 37.88 kg/cow (3 milkings per

Age at first calving: 22.6 months

Acreage under cultivation: 1821 ha, 166 of which are rented, are used to produce silage corn (324 ha), grain corn (236 ha), soybeans (724 ha), and cereals (170 ha), with the remaining 367 ha devoted to grassland



Célia Neault and Dominic Drapeau, their four children, Dominic's parents, Michel Drapeau and Sylvie Bélanger, and grandfather, Marcel Drapeau.

Although robotic milkers were already in use, the carousel was the best fit for the Drapeau family. Even today, Dominic says he has no regrets about that choice, which affords both labour efficiency and cost-effective milk production.

Room for genetic selection

In Dominic's view, the ideal animal in this large herd is "a problem-free cow, one we never hear about." To be more precise, he aims for healthy animals that breed easily and move without difficulty on good hooves.

In 2012, Dominic began using genomics as a selection tool, and the entire herd was evaluated. Now only the best cows, based on the Pro\$ index, are bred to provide replacement animals for the herd. Those with lower scores are inseminated with semen from beef sires. To further accelerate the improvement process, the best cows (25%)

and 85 per cent of the yearling heifers are bred with sexed semen. Only genomic young bulls are used as sires, and every two months or so, five or six of them are selected for 20 to 25 matings each.

At birth, all of the heifers are genotyped for immediate selection. Once the choice is made, Dominic ensures that the heifers develop well. They are weighed at birth, and then again at the age of two and four months, and are expected to have doubled their weight at each weighing.

The various genomic values are also used to select for conformation traits, but this is a relatively recent development. Since the animals aren't classified, longevity, along with changing genomic values, is the benchmark used to confirm improvement. The breeders aim for a lifetime production of at least 50 000 kg, and a low culling rate, which currently stands at 19 per cent. They also prefer

moderately sized cows, without excessive angularity. "In our barn, cows that are too angular don't last as long," Dominic explains.

Conclusive results

After a few years of applying this strategy, Dominic Drapeau is delighted with the results, not only with regard to production, but also in terms of health traits and longevity. In respect of milk production, not only has the herd's average genomic index increased, climbing from a few points above the breed average to a value +1100, actual production has also risen, from less than 9000 kg in 2010 to nearly 12 000 kg today. Fat and protein have followed the same upward trend. Even more telling, says Dominic, is the real variation observed in the herd when comparing the genomic indexes for the heifers. The top 25 per cent of the heifers born in 2013, with an average genomic index of 1500, had a first lactation that yielded 10 211 kg, exceeding the group average by 587 kg. In contrast, the 25 per cent of heifers at the bottom of the scale, with an average genomic index of 115, recorded a yield that fell 957 kg below the group average. In their second lactation, these same groups recorded similar differences.

Overall herd results have improved as well, not only for production, but also for the various indexes, in particular LPI, Pro\$, reproductive indices, resistance to mastitis and metabolic disorders, as well as the somatic cell score.

Dominic adds another example in support of a selection strategy based on genomics. Looking at the herd life index, the breeders noted that in 2017, 66 per cent of the top 10 per cent of the heifers born in 2010, 2011 and 2012 were still in the herd. In contrast, only 26 per cent of the heifers in the bottom 10 per cent of that group remained in production.

Another construction project

Dominic Drapeau and his partners intend to take advantage of any opportunities to acquire additional quota and gradually increase production and the size of the herd. The addition of some new cows over the past few months has served to underline the importance of cow comfort, Dominic says. Contrary to expectations, he explains,

After weaning, the heifers are housed on manure pack bedding.

From generation to generation

Dominic represents the fourth generation to operate the family farm in Sainte-Françoise, in the Bécancour RCM. His great-grandfather settled there after moving from Charny, in the wake of the financial crisis in the thirties. His grandfather Marcel later took over the farm, as did his parents, Michel and Sylvie. Now it is Dominic and his wife Célia Neault's turn to manage the business. A particular feature of this family is that at one time, three generations shared ownership of the farm: Dominic, his mother and father, and his grandfather. The latter, now 88, is retired, and Célia Neault has since joined the team of shareholders. Farm transfers among the Drapeau family are done by providing everyone with a salary, so that no one will ever lack for anything, which makes it easier for the younger farmers, as they're not required to shoulder a large investment or debt load.

On a day-to-day basis, Ferme Drapeau et Bélanger relies on 12 permanent employees, including 3 Nepalese and 2 Guatemalans, in addition to 6 part-time employees, and 10 students who work weekends. Many of the casual employees are experienced workers recruited among Dominic's father's friends. Dominic's parents continue to play an active role, with his father in charge of the field team and the garage, and his mother overseeing the administration of the operation.

To be hired, Dominic explains, a prospective employee must share the owners' values. A qualified candidate who doesn't share those values will not be hired. Moreover, permanent employees are not required to work weekends. Célia maintains a good relationship with the employees through constant communication and on-the-job training. Hence the farm takes part in the Quebec government's Workplace Apprenticeship Program (WAP), whereby employees are awarded a diploma attesting to their skills as agricultural workers, and the farm benefits from a tax credit of up to 30 per cent of the employees' salary during the training period.

production levelled out, "indicating that it was time to act." He attributes the situation to insufficient cow comfort and feed bunk space. As a result, the breeders are planning to expand their facilities over the coming months. Despite the increasing number of cows, Dominic affirms that the 36-cow carousel system will still be sufficient to meet their needs.







Ferme Rhétaise

Where the herd is viewed as a homogenous whole

s a new shareholder since 2016, Philippe Leclerc manages the Rhétaise herd. His keen interest in breeding drives his desire to constantly improve the herd's genetics. He explains that a cow-by-cow approach is not the way to go when working with a large herd. Instead, he looks at the herd as a whole, a perspective that doesn't, however, prevent him from making the most of the tools available to all breeders.

For reproductive purposes, he has divided the herd into two groups. The first group, which includes about half the herd, comprises cows that score positive relative to the breed average (lifetime BCA), taking into account milk, fat and protein deviations. These cows are bred with semen from Holstein sires, and most of the resulting heifers become replacement animals for the herd. The remaining group of cows is inseminated with semen from beef sires.

To be selected, dairy sires must have a proof of at least 1000 for milk. They also need to have a score of -0.1 or more for fat and



Free stalls with sand bedding ensure the comfort of the dairy cows in the Rhétaise herd.

FERME RHÉTAISE AND CULTURES ROUSSEAU

Herd: 550 head, including 300 lactating cows

Quota: 350 kg BF/day

Average production: 9600 kg of milk, with 4.2% fat and 3.5% protein

BCA: 193-209-201

Calving interval: 385 days

Classification: 2 EX, 39 VG and 180 GP

Acreage under cultivation: 790 ha, including 280 devoted to grain corn, 75 to corn silage, 160 to soybeans, 60 to mixed grains (oats, wheat and peas), 35 to cereal forage crops for silage (a cover crop for the grasslands), and 180 to hay (111 to alfalfa, stored in a bunker silo, and the rest to grasses, harvested in wrapped round bales).

protein, and indexes of at least 101 for fertility and 100 for herd life, in addition to a somatic cell (SCC) score below 3. Once the proofs have been analyzed, about 10 to 12 sires might meet these criteria, a group that generally includes 3 or 4 proven sires, with the rest being genomic young sires. Philippe Leclerc then selects the 4 or 5 best bulls on the basis of total milk solids, a criteria he considers decisive given that milk payments are based on the amount of milk solids sold.

The list of genomic sires varies with each proof round, and to avoid overusing a same sire, Philippe doesn't reuse a bull that appears on the proof sheet for a second time. If the same bull is still rated among the best for a third round, however, the animal may be used again. Classification is also considered when selecting sires, and the matings are planned with a view to correcting the weaknesses of each cow.



Milk and field crops

Brothers Jean and Paul Rousseau operate two farms in Nicolet, namely, Ferme Rhétaise inc., devoted to dairy production, and Cultures Rousseau inc., devoted to field crops. Rightly proud of their achievements, the Rousseau brothers were awarded the gold medal in the *Ordre national du mérite agricole* competition in 2016.

Because Paul's son Bernard, who intends become involved in the business, is more interested in cereal production, the Rousseau brothers have turned to an unrelated young farmer to ensure the continuance of the dairy herd.

Taking up that challenge is Philippe Leclerc, a graduate of the ITA, Saint-Hyacinthe campus, in zootechnology, who grew up on Ferme Clerval, in Saint-Zéphirin, and who has been working full time with the Rousseau brothers since 2014. A shareholder since 2016, Philippe is in charge of managing both the herd and the seven employees who work there, three of whom are assigned to milking, two to feeding, one to cleaning, and the last to heifer care.



In 2016, Ferme Rhétaise won the gold medal in the *Ordre national du mérite agricole* competition. This photo, taken for the competition in the summer of 2016, presents the team behind the farm, from left: Fany Bruyère, Bernard Rousseau, Thérèse Gras, Paul Rousseau, Pascal Manseau (nephew to the Rousseaus), Jean Rousseau, and Philippe Leclerc, the most recent shareholder.

Normally, between 110 and 115 heifers are born on the farm each year. Because only about 100 of them are needed as replacement animals (20% culling rate), Philippe uses genomics to choose the best. Those with the lowest Pro\$ index based on the parent average are genotyped, and the results determine the fate of those that are theoretically the least likely to be productive.

A considerable amount of money is invested in the purchase of sexed semen. From the 100 heifers inseminated each year, the top 30, based on the Pro\$ index, are selected to receive this type of semen.

This approach is good for the herd, explains Philippe, because it makes for rapid selection at birth. The breeder is convinced his strategy will prove successful, a conviction he'll soon be able to confirm as the first yearling heifers from the program are now in their first lactation.

In Philippe's view, the strategy generally used by large herd owners, that is, improving herd genetics by looking at the herd as a whole rather than cow by cow, doesn't lend itself well to using embryo transfers. As the breeder explains, he would need to perform a large number of transfers to get at least 25 females, to have an impact on the next generation. "Only getting 4 or 5 heifers a year from transfers isn't sufficient to have an effect," he says.

Good care to maximize production

Éléna Marsolais, Philippe's wife, is in charge of calf management. Like Philippe, Éléna has a diploma in zootechnolgy from the ITA in Saint-Hyacinthe. The first step in calf care is to make sure that the calves ingest four litres of colostrum. Tube feeding is used to ensure sufficient intake. Vaccines are also administered in the first hours after birth, and the animals are dehorned as well.

At 7 days, the heifers are placed together in a pen and are fed with an automatic milk feeder for a period of 62 days. Thereafter, the animals remain in the same environment but receive no milk, which Philippe and Éléna explains facilitates weaning. Over the next 6

months, the heifers are housed in pens and then transferred to a free-stall barn equipped with mattresses until they are bred. During pregnancy, they are housed in free stalls with sand bedding. The heifers are bred at a weight of 395 kg, resulting in a first calving at an average age of 24.3 months. The breeders are aiming for an ambitious target of 21.5 months, which should be easier to attain when the new nursery facilities are in place.

Waited on hand and foot

The 300 cows in lactation are divided into 4 groups. The first 3 groups, comprised respectively of first-calf heifers, cows in early lactation, and high-producing cows, are milked three times a day in a double-10 parlour. The fourth group is made up of cows in late lactation, and these are milked twice a day. The breeders are considering forming a fifth group for cows in mid-lactation.

The milking cows are fed a TMR made up of grass, cereal forage and corn silages, grain corn, mixed grains and a soybean meal supplement. Four different formulas are created from these ingredients to meet the specific needs of each of the groups.



Four different TMR formulas meet the specific needs of the herd's four groups of cows.

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More cows don't mean less work, just doing things differently



arge dairy farms tend to arouse envy. Admiring the modern facilities and the latest high-performance machinery parked in the garage, and knowing that substantial revenues are part of the package, others may be encouraged to do the same. Many wonder: Why not me?

Although these things are true, the experts consulted for this article advise caution. While large operations do attract covetous looks, they also require an all-embracing commitment on the part of the owners who operate and manage them, and not all dairy farmers are interested in that level of engagement. There are no auras around large farms, and no guarantees of efficiency either. Moreover, say the experts, producers who expand their operations in the hopes of lessening their workload are misguided. The workload is comparable; the work is just done differently.

Being an entrepreneur

Entrepreneurship is an essential characteristic for dairy farmers who own or hope to operate a large dairy herd. How does one define the mind-set required for this sort of operation? First and foremost, says Nicolas Jobin, consulting agronomist and owner of Groupe Vision gestion, in Saint-Hyacinthe, it means having a desire to develop one's business. But it also means having a predilection for management and a tolerance for risk. For an entrepreneur, "managing means understanding what one does, looking for efficiency everywhere, and striving to

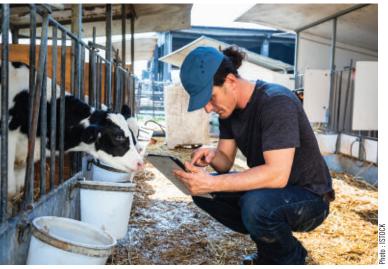
produce at lower cost," Mr. Jobin explains. An ability to manage risk is also indispensable, because major investments are required.

For André Grenier, also a self-employed consulting agronomist, in Princeville (Question Conseil), an entrepreneur is a person who is able to look at his or her operation as a whole. Agricultural expertise is an obvious requirement, as are management skills, particularly with regard to financial matters and human resources. He adds that because large operations often employ 10 or more employees, it is important to be well-informed of labour laws. Owners need to be able to negotiate salaries, work schedules, and holidays within the limits of these laws. He also points out that women are increasingly participating in the workforce on the farm. They are highly competent and valued employees, but owners must be mindful of the laws that govern their work conditions relative to pregnancy, preventive withdrawal and maternity leave. Young families appreciate these programs and they are here to stay, he explains, so producers need to know about them.

Mr. Jobin further explains that expanding one's business by three to four per cent per year represents moderate growth. At that rhythm, he says, "expansion is smooth", but it is also important to take into account the overall market. Supply management anticipates production of a certain quantity of milk to meet the needs of the population. If the population or dairy consumption increases, dairy operations have room to expand, a reality that needs to be considered before undertaking any major investment. In that context, interpreting dairy consumption graphs becomes a management tool.

Being an entrepreneur, adds Nicolas Jobin, often means being creative, and a little stubborn. When managed well, these qualities can be a driving force for successful development. On the other hand, they can also become serious flaws if producers allow themselves to be carried away by their emotions. In the latter case, instead of contributing to the wellbeing of the business, they can bring it crashing down. Temperance is the key.





Knowing how to delegate responsibilities to a reliable employee is one component of managing a large dairy farm.

Knowing how to delegate and build a team

Being an entrepreneur, says Mr. Grenier, also means learning to trust others and delegate appropriately. Those may not be inherent characteristics of the traditional farmer, he says, but they are fundamental for large farm managers. While a producer can control all aspects of a small farm, a large herd owner has to share the work. Success depends greatly on the support provided by the employees

must be qualified and able to manage the team appointed to a particular sector of production, whether that be the herd, the garage and machinery, or crop management. Ensuring that everyone is working towards the same goals requires mutual respect and constant communication, a responsibility that resides with the principal manager. With that in mind, knowing how to listen and being able to re-examine one's approach are indispensable traits for those who wish to become large herd owners.

in charge of the operation's various departments. These key people

Being an entrepreneur also involves surrounding oneself with a team of professionals, in matters of finance, herd health and productivity, field management, and a new priority sector, the environment. With regard to the latter, farms cultivating large areas of cropland must not only comply with environmental regulations when spreading manure, but must also consider neighbouring residents, who may suffer the negative side effects of these operations.

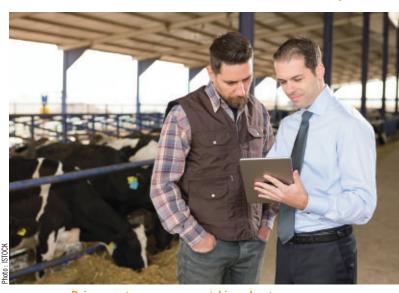
Managing the finances

Money is the lifeblood of business, and since it is relatively easy to borrow money in Quebec, entrepreneurs need to be vigilant. Advisors recommend that owners keep at least fifty-per-cent equity in their farms. If an operation in that position is planning a major investment, such as buying the neighbouring farm or building a new barn to accommodate the younger generation, it may find itself in a more vulnerable position. This type of transaction can increase the debt load considerably and may jeopardize the farm's financial situation if revenues thereafter are lower than expected. Hence it is important to accurately evaluate future income.

In view of that, a financial advisor certainly has a place among the professionals surrounding a large herd owner. Even with revenues of \$4 to 5 million per year, expenses can sometimes amount to 60 per cent, before salaries and repayments, which means that even minor overspending can complicate the situation. Talking with an advisor who necessarily has a more objective view of the situation can be beneficial. There is no doubt that all producers benefit from judicious advice, but because one bad decision can have a devastating impact



de stalles, logettes, barrières, mangeoires, abreuvoirs, chariots manuel, etc...



Being an entrepreneur means taking advantage of every opportunity to consult with an expert.



Women are increasing their participation in the dairy farm workforce, where they are regarded as very competent employees.

on a large farm, the need to consult with an expert is all the more important for managers of these operations.

In principle, says Nicolas Jobin, financial institutions lend according to a producers' ability to repay the loan, but we know they can grant a loan based on other commercial considerations as well. It is important to remember that in agriculture, in Quebec, banks and credit unions face little risk, while producers assume a great deal more. If producers don't do their homework and don't know their own limits, they can find themselves in a difficult position. Producers must make an effort to accurately evaluate their ability to repay, because analyzing a big project with rose-coloured glasses can have disastrous consequences.

If carrying out a plan means increasing the debt load to more than 50 to 55 per cent of the farm's assets, an individual credit arrangement could be considered, for example, repaying only the interest on the loan for a short period until expected revenues come in.

Both Nicolas Jobin and André Grenier agree that it is also important to plan based on a maximum amortization of 15 years, even during a period of growth. Of course, newly built facilities will have a longer useful life than some types of equipment or machinery. In this regard, underlines André Grenier, it is not true that large farms have fewer debts than smaller ones. On a percentage basis, the debt load is often comparable, regardless of the type of operation. The problem with large herds is that, in absolute terms, the numbers are

substantial. The farm has a high value, but at the start, the debt load grows at the same rhythm. For large farms, he explains, a bad decision can thus have a more disruptive effect.

Three levels of risk

Managing a dairy farm involves three levels of risk. Firstly, there is operational risk, that is, the ability to manage the aspects that can be controlled on the farm, such as livestock, crops, etc. Generally speaking, producers today are well prepared for this facet. Secondly, there are strategic risks, related to putting together and implementing a business plan, which may involve, among other concerns, integrating the younger generation, managing employees, organizing the different stages of development and their financing. In this market niche, the risk is considered to be moderate to high. For example, when producers are allotted additional guota, some are so excited about





Large dairy farms generally invest substantially in new high-performance machinery.



being able to increase revenues that they may lose their heads, explains Nicolas Jobin. On the other hand, if producers have planned their strategy carefully and are able to stick to their plan, the situation can be profitable. Lastly, there are external risks, that is, the aspects over which producers have no control. This category includes the various trade agreements between Canada and other countries, such as NAFTA, as well as federal and provincial dairy policies.

Economies of scale

Economies of scale are often presented as an automatic benefit of any business growth, regardless of the industry segment. Is this the case with large dairy farms as well? On the one hand, explains Nicolas Jobin, some economies are possible when an operation producing a quota of 50 kg BF/day doubles production. For those already producing 100 kg, however, the economies of scale are less evident. Labour savings are also possible, but these depend greatly on the production facilities. Moreover, explains André Grenier, the more employees a farm has, the more likely the various constraints related to group management, in particular flexible work hours during periods of high production, will require hiring more part-time labour, which eats into the anticipated benefits. He adds that some economies of scale are also possible on the purchase of farm inputs, since buying large quantities of supplements, concentrates, seed or fertilizer can facilitate negotiating a better price, but he explains that these reductions don't have a significant impact on the overall expenses of an operation.

Margin of error

An entrepreneurial approach with a business focus is all the more important, say the experts consulted, as the margin of error is smaller

for large farms than for small ones. On large farms, everything is often new and investment levels are high, as are the loan payments. A difficult period generating lower revenues or increased expenses could rapidly compromise an operation's performance, making it impossible to meet its financial commitments. Moreover, if a large farm eventually decides to suspend its operations, the market value of its assets may be affected by the size of the offer. Selling 100 ha of land isn't usually a problem, but finding a buyer for 1000 ha may be more difficult. In the same vein, selling off a herd of 50 lactating cows is a relatively easy task, but selling 500 or 600 cows at a time may lead to a shortage of buyers and a consequent drop in price.

Technical competence

Nowadays, the large majority of dairy producers have some agricultural training and are thus well versed in the various facets of breeding and production, as much in the barn as in the fields. What's more, younger farmers are not afraid of technology and are very comfortable with robotization. All these factors contribute to a greater vigilance on their part. Despite that, some are better than others at controlling the various management parameters.

In 2016, a study was conducted among a group of 150 members of an agricultural management pool, each owning over 100 cows. The findings were presented last December by the Groupe multiconseil agricole Saguenay-Lac-Saint-Jean at the seventh Rendez-vous d'expertise, a yearly seminar on herds of 100 head or more. The statistics show, among other things, that these 150 farms have an average milk production cost, or target price, of \$68.57 per hectolitre. For the 30 topranking farms, this cost was \$61.28, while the 30 lowest ranking farms were spending \$82.42. As a



A meeting with a representative of one's financial institution calls for careful preparation.

whole, the group had a margin of \$10.08 relative to the price they obtained for the milk, with the top farms showing a margin of \$17.18, while those at the bottom of the scale entered a shortfall of \$3.75. These statistics and others are available through Via, pôle d'expertise en services-conseils agricoles (formerly Groupes conseils agricoles du Québec), whose offices are in Nicolet.

Obviously there are still improvements to be made in terms of efficiency on large dairy farms. In the words of Pascale Maltais, an agronomist and farmer currently employed by the Groupe multiconseil: "The best managers are probably those that know everything about production, regularly monitoring every facet of their operation, which enables them to react quickly when needed." The future of a large dairy farm thus lies in the hands of the producer.

