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Dairy Production Centre of Expertise
Quebec-Atlantic

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Udder health and organic dairy production

The key word is prevention!

The somatic cell count (SCC) of organic dairy producers' herds compares rather well with the average SCC for Quebec dairy herds.

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According to a comparative analysis of dairy operations for which Valacta has access to comprehensive data (production, herd size, reproduction and feeding), herds shipping certified organic milk have an average SCC of 276,000 compared to the Quebec average of 264,000 (source: Evolution of Dairy Production, Quebec, 2009).

It's interesting to note that, despite their distinct context, producers that are certified "organic" share a number of similarities with their so-called "conventional" colleagues in Quebec. As we can see in Table 1:

- The average size of organic herds is 54 cows compared to the Quebec average of 56.
- The calving interval of the organic herds is identical to the Quebec average (428 days), and the interval from

calving to first service is similar (87 versus 85).

- The culling rate in organic herds is 27 per cent compared to the Quebec average of 31 per cent. It appears then that organic producers are not forced to remove a large number of animals from their herds to obtain a SCC comparable to the Quebec average.
- Average age (four years and three months) and percentage of third lactation or older cows (44 per cent) in the organic herds are also similar to the averages for Quebec herds (four years and one month and 43 per cent, respectively).

Udder health vs production level

It is generally acknowledged that cows become more susceptible to mammary gland infections as the number of lactations and production level increase. As of the third lactation, the relative importance of culling for mastitis reaches a level comparable to that for reproduction. From the fourth lactation on, it becomes the primary reason for cow removal.

Increasing a cow's production level increases the risk of a rise in her SCC. At the herd level, however, the response is more balanced. When herds are stratified

by production level, we see that an increase in a herd's annual production (kg/cow/year) is generally accompanied by a decrease in its average SCC. Herds with higher annual production therefore have a lower average SCC. In fact, the good management of these herds enables them to compensate for the increased susceptibility of high producing cows. These correlations are seen as much in certified organic herds as in conventional herds.

In 2009, the average production of certified organic herds was 6,654 kg/cow/year compared to the Quebec average of 8,504. One is entitled to wonder if this difference in milk yield might account in part for the decreasing SCC in the organic herds. In other words, could the lower production level of the certified organic herds contribute to increased resistance to mammary infections?

A comparison of certified organic herds and conventional herds with similar production levels sheds some light on the question. As Table 1 shows, the milk production stratum that corresponds to percentile rankings 41 to 60 for Quebec herds (average of 8,537 kg/cow/year) has a SCC of 267,000. The milk production stratum that corresponds to the percentile rankings 81 to 100 for the certified organic

herds (average of 8,030 kg/cow/year) has a SCC of 270,000. Hence, for a same level of production, the SCC of these two groups of producers is similar.

Findings valid for all dairy producers

Certified organic herds with the highest level of production (probably the group's best managers) have a SCC similar to that of conventional herds with the same level of production. Yet these organic herds intentionally do without the use of antibiotics. Does this tell us that antibiotic-based curative or preventive therapies are of no use in preventing and controlling mastitis?

Naturally the answer is no.

The efficiency of antibiotic-based therapies (during lactation or drying off) has been scientifically demonstrated, and they have proven their worth as a valuable tool in an udder health strategy. On the other hand, the efficiency of alternative udder health therapies has not yet been clearly demonstrated.

So how do we explain the good results of the organic herds in terms of SCC? Obviously, the message we should be taking home is that the *sound management practices* implemented by organic producers can make a big difference in udder health. And when all is said and done, these good practices reflect a fundamental approach – one that focuses on prevention.

Udder Health Prevention proves its worth...

- Milking method
- Maintenance of milking equipment
- Cows' environment
- Monitoring udder health with your veterinarian

The emphasis on prevention in organic dairy production over the past few years has paid off: the average SCC of certified organic herds has been dropping constantly since 2003 (from 334,000 to 276,000), while the Quebec average has fluctuated between 250,000 and 270,000 for more than a decade now. The high enrolment rate in milk recording (93 per cent) and organic dairy production advisory services (81 per cent) is certainly a contributing factor in the success of these producers. Likewise, since 2005, a technology transfer project aimed at improving milk quality has given many producers the opportunity to benefit from the expertise of an "organic" advisor as well as a technician specializing in milking methods and equipment.

Once again, the message is clear: prevention can go a long way toward maintaining udder health. This is true for all dairy producers.

In 2010, the *Association des médecins vétérinaires praticiens du Québec* (AMVPQ), the *Faculté de médecine vétérinaire*, the Canadian Bovine Mastitis Research Network (CBMRN), Valacta, and their industry partners made prevention a priority. Among other initiatives, they put together the *Udder Health: True Value!* training course, in which more than 2000 producers took part between January and April 2010. If Quebec is to stand out as a Canadian leader in milk quality, these efforts must now continue at the farm level, on a day-to-day basis.

**Quebec dairy producers (organic AND conventional):
it's your turn to take action!**

Table 1. Performance comparison, Quebec Holstein herds vs organic herds, 2009

Milk production strata (20 %) ²		0-20	21-40	41-60	61-80	81-100	Average	0-20	21-40	41-60	61-80	81-100	Average
		All Quebec Holstein herds						Organic production (all breeds)					
Production	Number of herds	319	319	319	319	319	1 595	17	17	16	16	16	82
	Number of cows per herd	47,7	55,2	55,9	60,4	63,0	56,4	40,2	48,5	48,6	65,0	66,1	53,5
	Milk (kg/cow/year)	6 852	7 959	8 537	9 091	10 080	8 504	5 252	6 170	6 674	7 265	8 030	6 654
	Fat (kg/cow/year)	262	306	330	350	387	327	209	237	264	276	313	259
	Fat (%)	3,83	3,85	3,86	3,85	3,84	3,85	3,98	3,85	3,95	3,81	3,90	3,90
	Protein (kg/cow/year)	219	257	276	294	325	274	168	193	209	223	252	208
	Protein (%)	3,20	3,23	3,23	3,23	3,23	3,22	3,20	3,13	3,14	3,07	3,14	3,14
	SCC ('000 s.c./ml)	302	278	267	247	227	264	292	281	265	268	270	276
	Linear score	3,1	3,0	2,9	2,8	2,7	2,9	3,1	3,1	3,0	3,0	3,0	3,0
	Corrected milk ³ (kg/cow/day)	25,1	28,6	30,5	32,3	35,4	30,4	19,4	22,0	23,5	25,2	28,5	23,6
Population	Culled cows (%)	28,8	31,4	31,0	31,6	33,7	31,3	24,0	31,6	27,5	27,2	23,5	26,8
	Voluntary culling ⁴ (%)	2,7	3,9	4,5	5,2	7,7	4,8	2,3	4,1	3,6	5,3	2,2	3,5
	Involuntary culling ⁴ (%)	18,3	20,9	20,9	21,1	21,2	20,5	16,6	22,8	18,8	18,4	16,7	18,7
	Cows in lactation (%)	85,1	86,6	86,8	87,0	87,3	86,6	83,3	85,0	87,2	86,1	86,1	85,5
	3rd lactation and more (%)	44,5	42,7	43,3	42,5	40,9	42,8	47,1	43,0	40,6	47,3	43,5	44,3
	Herd age (year - month)	4-4	4-2	4-2	4-0	3-11	4-1	4-6	4-3	4-2	4-3	4-2	4-3
	Herd weight (kg)	624	634	641	645	657	641	577	590	598	618	632	604
	Age of heifers at 1 st calving (mo.)	28,7	27,7	26,9	26,7	26,1	27,2	29,1	28,5	28,5	27,1	27,8	28,2
Reproduction	Weight of heifers at 1 st calving (kg)	580	589	593	601	611	596	535	560	562	573	587	564
	Calving interval (days)	440	430	426	424	422	428	441	432	428	410	426	428
	Days to 1 st service	90	84	82	83	84	85	87	92	85	83	84	87
	Services/cow/year	2,08	2,21	2,32	2,35	2,36	2,27	1,78	1,86	2,20	2,14	2,30	2,05
	Days dry	73	68	67	66	66	68	78	77	69	66	68	72
Days open	158	148	144	142	140	146	159	150	146	128	144	146	

¹ Valacta clients, with feeding service and with validated data for the 12-month period ending with the last test before 31 December 2009. Organic Holstein breed herds are included in the "All herds" block.

² The 0-20 stratum gives the average for the 20 per cent of herds with the lowest milk production, etc.

³ Corrected milk is the milk yield adjusted at 2nd lactation, at 150 days in milk, at 3.8 per cent fat and 3.3 per cent protein.

⁴ The category "Other" is not included in these fields.

Source: Evolution of Dairy Production 2009, tables 3-2 and 3-3.