

**Bud hardiness monitoring for the winter 2021-2022**  
*Bulletin 6*

By Andréanne Hébert-Haché, Ph.D. candidate, Alexander Campbell, M.Sc. agr. and Caroline Provost, Ph.D

The cold temperatures of winter 2021-2022 have arrived. By the time this bulletin was written on January 21, we had noticed three separate cold spells around January 3, 11 and 15. Very little primary bud mortality was observed prior to these episodes. Since then, the survival rate has decreased and is generally between 50% and 90% depending on the site and the cultivar (Table 1). Since then, a fourth episode around January 21 has probably caused additional damage. Hardiness differences and minimum temperatures on specific sites can explain these large variations in bud survival. In January, outdoor temperatures have often approached or exceeded lethal temperatures for 10% of buds (LT10), and even for 50% of buds (LT50) in some cases (Figures 1 & 2). Only live buds are assessed by our hardiness evaluation. When a lot of mortality occurs, the buds that survive are the hardiest. In subsequent analyses, this could give the false impression that the vines are more acclimated to cold. On the other hand, the vines are currently in their maximum hardiness period, but are still very sensitive to changes in outside temperatures. At this time of the year, it is not uncommon to notice partial de-acclimation and re-acclimation following temperature changes. It is therefore important to always rely on data before a cold spell to estimate the risk of damage and to remember that hardiness is a dynamic characteristic that changes over time.

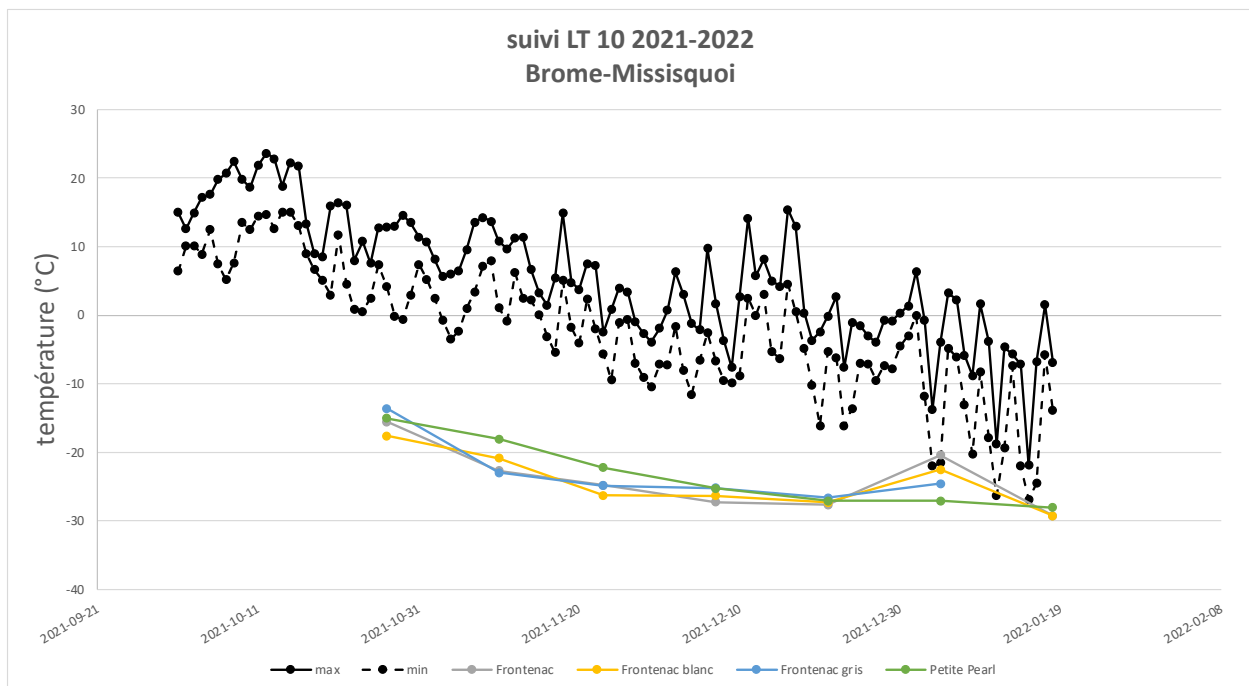


Figure 1 : Cold hardiness monitoring in the Regional County Municipality of Brome-Missisquoi. LT10 represents the lethal temperature for 10% for the primary buds.

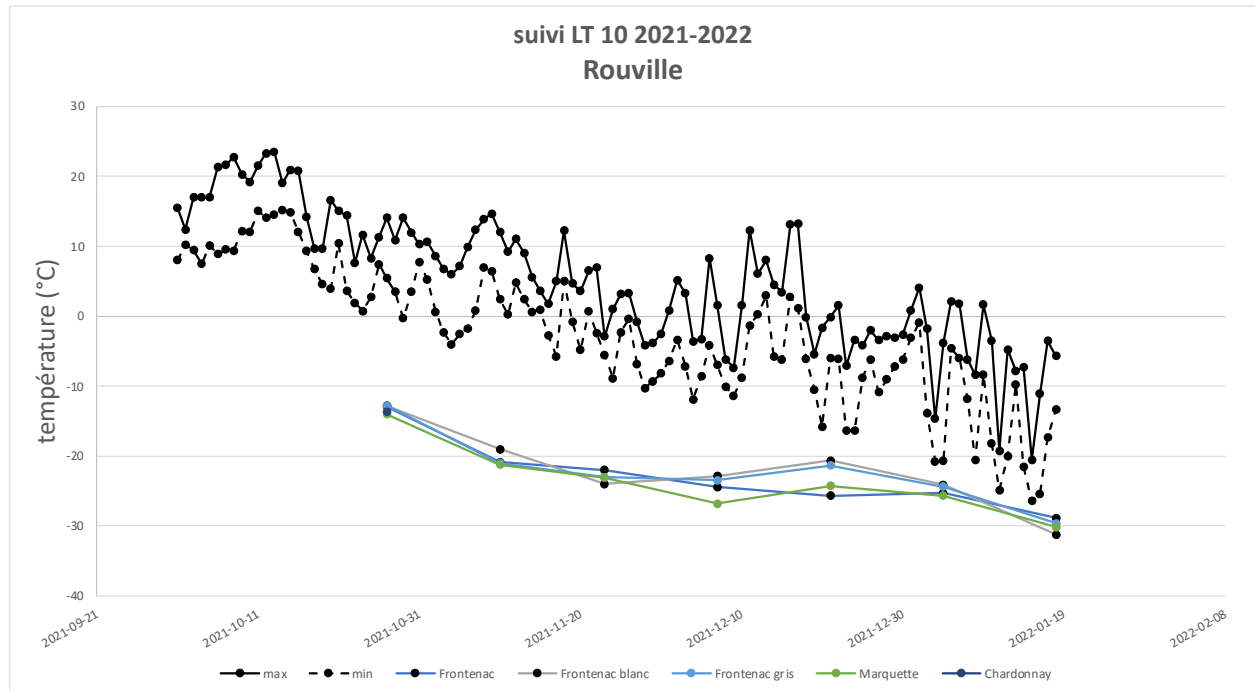


Figure 2 : Cold hardiness monitoring in the Regional County Municipality of Rouville. LT10 represents the lethal temperature for 10% for the primary buds.

Tableau 1: Primary bud survival over the last two weeks

région	MRC	cépage	date	taux de survie	région	MRC	cépage	date	taux de survie
Estrie	Memphrémagog	Frontenac	18-Jan-22	65%	Montérégie	Le Haut-Richelieu (site 2)	Petite Pearl	14-Jan-22	94%
Estrie	Memphrémagog	Frontenac blanc	18-Jan-22	63%	Montérégie	Le Haut-Richelieu (site 2)	St-Pépin	14-Jan-22	73%
Lanaudière	D'Autray	Frontenac	13-Jan-22	80%	Montérégie	Les Jardins-de-Napierville	Frontenac	14-Jan-22	87%
Lanaudière	D'Autray	Frontenac blanc	13-Jan-22	86%	Montérégie	Les Jardins-de-Napierville	Frontenac blanc	14-Jan-22	79%
Lanaudière	D'Autray	Frontenac gris	13-Jan-22	83%	Montérégie	Les Jardins-de-Napierville	Marquette	14-Jan-22	77%
Lanaudière	D'Autray	Marquette	13-Jan-22	77%	Montérégie	Les Jardins-de-Napierville	Petite Pearl	14-Jan-22	85%
Lanaudière	D'Autray	Petite Pearl	13-Jan-22	83%	Montérégie	Marguerite d'Youville	Frontenac gris	19-Jan-22	86%
Lanaudière	Joliette	Marquette	13-Jan-22	96%	Montérégie	Marguerite d'Youville	St-Pépin	19-Jan-22	58%
Laurentides	Deux-Montagnes	Frontenac	20-Jan-22	76%	Montérégie	Rouville	Frontenac	18-Jan-22	78%
Laurentides	Deux-Montagnes	Frontenac blanc	20-Jan-22	79%	Montérégie	Rouville	Frontenac blanc	18-Jan-22	81%
Laurentides	Deux-Montagnes	Frontenac gris	20-Jan-22	85%	Montérégie	Rouville	Frontenac gris	18-Jan-22	70%
Laurentides	Deux-Montagnes	Marquette	20-Jan-22	70%	Montérégie	Rouville	Marquette	18-Jan-22	81%
Laurentides	Deux-Montagnes	Petite perle	20-Jan-22	75%	Montérégie	Vaudreuil-Soulanges	Frontenac	20-Jan-22	52%
Laurentides	Deux-Montagnes	St-Pépin	20-Jan-22	65%	Montérégie	Vaudreuil-Soulanges	Frontenac blanc	20-Jan-22	
Montérégie	Le Haut-Richelieu	St-Pépin	14-Jan-22	77%	Montérégie	Vaudreuil-Soulanges	Frontenac gris	20-Jan-22	25%
Montérégie	Le Haut-Richelieu (site 2)	Frontenac	14-Jan-22	79%	Montérégie	Vaudreuil-Soulanges	Marquette	20-Jan-22	61%
Montérégie	Le Haut-Richelieu (site 2)	Frontenac blanc	14-Jan-22	89%	Montérégie	Vaudreuil-Soulanges	Petite Pearl	20-Jan-22	28%
Montérégie	Le Haut-Richelieu (site 2)	Marquette	14-Jan-22	77%					

### Acknowledgements

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Tableau 2 : Lethal temperatures for cultivars across the province. LTE 10, LTE 50, and LTE 90 represent the lethal temperatures for 10%, 50%, and 90% of the buds, respectively.

			2021-11-23			2021-12-07			2021-12-21			2022-01-04			2022-01-18		
Estrie	Memphrémagog	Frontenac	-22.41	-25	-27.06	-23.68	-25.87	-27.45	-20.51	-27.1	-29.39	-25.03	-28.24	-30.37	-25.76	-29.02	-31.35
		Frontenac blanc	-22.66	-24.6	-26.53	-22.41	-25.62	-26.87	-25.57	-28.4	-30.35	-13.08	-26.22	-29.64	-27.58	-30.54	-32.71
Lanaudière	Joliette	Frontenac	données manquantes			données manquantes						2022-01-12					
		Marquette	-26.61	-28.58	-30.02	-28.46	-30.07	-31.78									
Lanaudière	D'Autray	Frontenac	2021-11-30			2021-12-15						2022-01-12					
		Frontenac blanc	-24.43	-28.11	-29.09	-26.33	-29.22	-31.58				-30.85	-33.37	-34.65			
		Frontenac gris	-25.66	-28.11	-29.17	-27.36	-28.95	-30.97				-29.89	-32.94	-34.26			
		Marquette	-25.6	-27.57	-28.79	-26.51	-28.58	-29.52				-30.44	-32.27	-34.83			
		Petite Pearl	-25.86	-28.34	-29.72	-26.62	-28.02	-30.05				-29.97	-31.97	-33.31			
Laurentides	Deux-Montagnes	Frontenac	2021-12-09			2021-12-16						2022-01-06			2022-01-20		
		Frontenac blanc	-27.72	-29.38	-31.16	-23.87	-26.35	-27.77				-27.36	-28.88	-31.19			
		Frontenac gris	-22.65	-29.44	-31.33	-23.19	-26.38	-27.91				-26.01	-28.01	-29.76			
		Marquette	-28.63	-30.43	-32.45	-25.59	-26.89	-28.89				-27.22	-28.92	-30.51			
		Petite Pearl	-26.53	-29.59	-31.38	-25.64	-27.67	-29.02				-22.89	-27.04	-29.72			
		St-Pépin	-25.4	-28.38	-30.63	-19.01	-25.05	-27.2				-22.99	-26.43	-28.82			
		Seyval	-28.71	-30.4	-31.9	-24.06	-27	-28.9				-26.26	-29.04	-30.89			
Vidal	sous toile			sous toile			sous toile			sous toile			sous toile				
Laurentides	Deux-Montagnes (Site 2)	Frontenac	2021-11-24			2021-12-08						2022-01-05					
		Marquette	-24.18	-26.37	-27.46	-23.85	-29.16	-30.62				-23.68	-29.68	-32.53			
		St-Pépin	-27.08	-27.92	-29.28	-27.47	-29.96	-31.59				-26.37	-30.53	-32.02			
Montérégie	Brome-Missisquoi	Frontenac	2021-11-23			2021-12-07			2021-12-21			2022-01-04			2022-01-18		
		Frontenac blanc	-24.82	-26.56	-27.61	-27.23	-27.98	-29.09	-27.67	-29.26	-30.62	-20.38	-29.23	-31	-29.27	-30.82	-32.72
		Frontenac gris	-26.3	-28.07	-29.41	-26.32	-27.93	-29.02	-27.31	-28.73	-29.97	-22.52	-28.77	-30.49	-29.23	-30.66	-32.26
		Petite Pearl	-24.86	-26.44	-27.65	-25.18	-28.02	-29.16	-26.63	-28.32	-29.49	-24.59	-28.62	-31.27			
Montérégie	Les Jardins-de-Napierville	Frontenac	2021-12-01			2021-12-14						2021-01-11					
		Frontenac blanc	-22.26	-23.95	-25.74	-25.24	-28.51	-29.42	-27.07	-30.05	-32.43	-27.1	-30.09	-32.03	-28.05	-30.2	-31.9
		Marquette	-24.13	-27.25	-29.24	-20.91	-27.01	-29.52				-29.42	-31.66	-33.28			
		Petite Pearl	-25.07	-27.53	-28.68	-25.11	-27.79	-29.6				-30.38	-33.03	-34.72			
		Chardonnay	-25.68	-27.89	-29.34	-26.94	-29.5	-30.84				-28.22	-32.09	-33.68			
Montérégie	Les Jardins-de-Napierville (site 2)	Chardonnay	2021-12-01			2021-12-14						2021-01-11					
		Pinot noir	2021-12-01			2021-12-14						2021-01-11					
		Pinot gris	2021-12-01			2021-12-14						2021-01-11					
		Vidal	2021-12-01			2021-12-14						2021-01-11					
		Seyval	2021-12-01			2021-12-14						2021-01-11					
		Gamay	2021-12-01			2021-12-14						2021-01-11					

Tableau 2 (suite) : Lethal temperatures for cultivars across the province. LTE 10, LTE 50, and LTE 90 represent the lethal temperatures for 10%, 50%, and 90% of the buds, respectively.

région	MRC	cépage	LTE 10	LTE 50	LTE 90	LTE 10	LTE 50	LTE 90	LTE 10	LTE 50	LTE 90	LTE 10	LTE 50	LTE 90	LTE 10	LTE 50	LTE 90
Montérégie	Le Haut-Richelieu		2021-12-01			2021-12-14						2021-01-11					
		Marquette	-24.86	-26.66	-28.12	-26.07	-28.11	-28.77				-27.58	-30.68	-32.69			
		St-Pépin	-26.08	-27.42	-29.02	-22.98	-27.42	-29.65				-25.38	-29.88	-32.67			
Montérégie	Le Haut-St-Laurent (site 2)		2021-12-01			2021-12-14						2021-01-11					
		Frontenac	-22.52	-25.24	-26.9	-22.31	-26.31	-29.13				-26.18	-30.56	-31.74			
		Frontenac blanc	-22.72	-24.95	-26.64	-24.44	-26.1	-27.36				-23.22	-28.77	-31			
		Marquette	-24.32	-26.93	-28.02	-25.43	-27.35	-29.33				-19.48	-28.88	-30.81			
		Petite Pearl	-25.99	-28.53	-29.82	-28.28	-29.5	-31.18				-20.54	-31.52	-32.9			
	St-Pépin	-22.41	-23.95	-26.53	-22.91	-24.42	-26.19				-26.91	-29.17	-31.5				
Montérégie	Les Maskoutains	Pinot noir	sous toile			sous toile			sous toile			sous toile			sous toile		
		Gamaret															
		Gamay															
		Vidal															
Montérégie	Marguerite d'Youville		2021-11-24			2021-12-08						2022-01-05					
		Chardonnay	sous toile			sous toile			sous toile			sous toile			sous toile		
		Frontenac	-24.24	-26.28	-27.42	-26.23	-28.47	-29.51				-25.72	-29.3	-31.89	-28.85	-32.35	-34.45
		Frontenac gris	-23.46	-25.01	-26.71	-25.25	-28.2	-30.51				-25.59	-28.92	-30.41	-30.73	-32.04	-34.43
		Marquette	-25.34	-27.37	-29.17	-27.2	-28.75	-30.29				-26.29	-29.69	-31.03	-30.08	-32.15	-33.28
		Pinot noir	sous toile			sous toile			sous toile			sous toile			sous toile		
		St-Pépin	-26	-27.39	-28.66	-26.12	-28.51	-30.21				-28.14	-30.59	-32.38	-31	-33.43	-35
	Vidal	sous toile			sous toile			sous toile			sous toile			sous toile			
Montérégie	Rouville		2021-11-23			2021-12-07			2021-12-21			2022-01-04			2022-01-18		
		Chardonnay	sous toile			sous toile			sous toile			sous toile			sous toile		
		Frontenac	-22.02	-23.98	-25.95	-24.45	-26.28	-27.61	-25.66	-28.02	-29.97	-25.31	-29.89	-31.28	-28.87	-31.87	-34.42
		Frontenac blanc	-23.99	-25.17	-26.76	-22.86	-26.52	-27.91	-20.64	-27.33	-28.42	-24.12	-28.73	-30.17	-31.22	-32.49	-33.77
		Frontenac gris	-23.01	-24.34	-26.69	-23.49	-26.14	-27.96	-21.38	-27.07	-29.35	-24.36	-28.52	-30.36	-29.62	-32.64	-35.59
		Marquette	-23.08	-24.87	-26.87	-26.84	-28.31	-29.66	-24.3	-26.7	-29.62	-25.68	-29.59	-31.26	-30.16	-31.91	-33.22
	Vidal	sous toile			sous toile			sous toile			sous toile			sous toile			
Montérégie	Vaudreuil-Soulanges		2021-11-25			2021-12-09						2022-01-06			2022-01-20		
		Frontenac	-22.92	-25.09	-26.59	données manquantes						-15.04	-18.25	-29.14	-31.01	-32.65	-33.16
		Frontenac blanc	-21.4	-24.89	-26.87							-13.35	-16.25	-28.06	-28.34	-31.78	-33.58
		Frontenac gris	-21.29	-24.26	-26.1							-14.22	-16.37	-28.82	-31.39	-32.51	-33.63
		Marquette	-26.72	-27.97	-29.27							-24.43	-29.32	-31.2	-30.11	-32.31	-33.11
		Petite Pearl	-18.51	-22.66	-23.79										-25.84	-29.56	-32.36
St-Pépin	-25.94	-26.81	-28.77									-26.9	-28.71	-30.35	-31.2	-33.12	-34.23