



The effect of temperature on potato tuber respiration

Annex 1

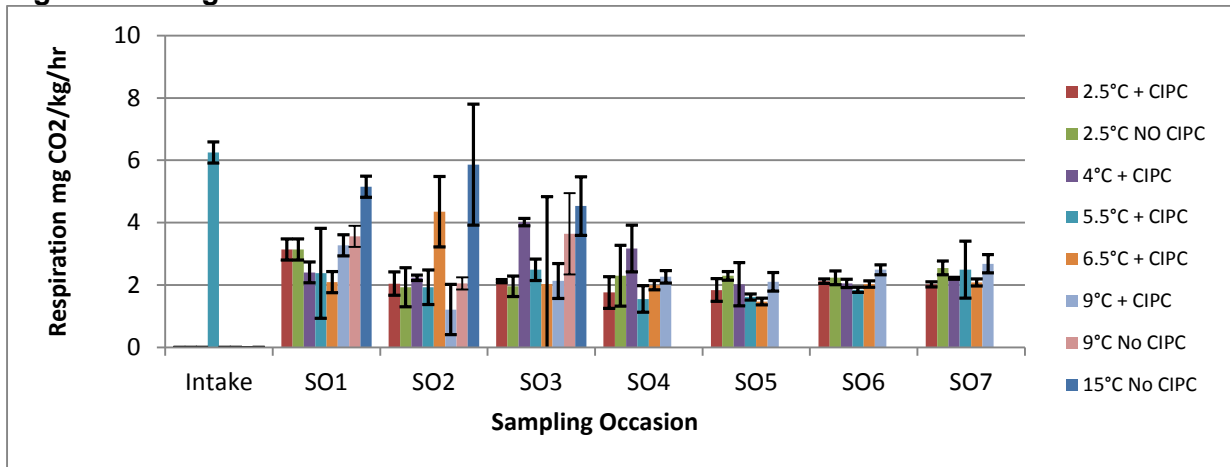
**AHDB
Sutton Bridge Crop Storage Research
East Bank, Sutton Bridge**

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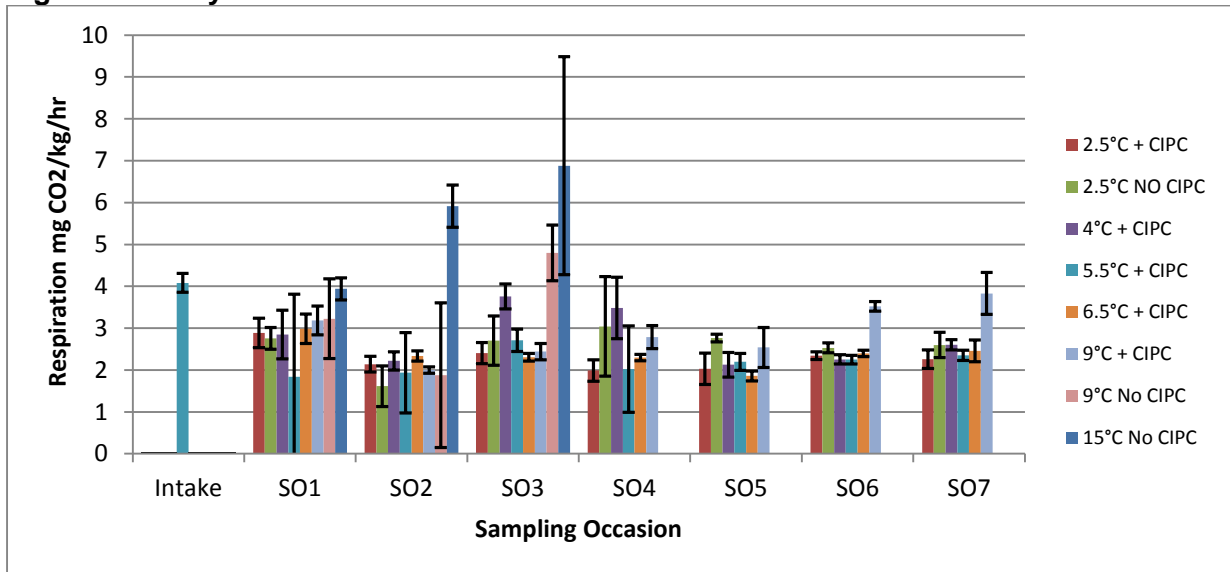
Figures 1a - e. Variety respiration rates at different storage temperatures over monthly storage intervals during 2014-15.

Figure 1a. King Edward



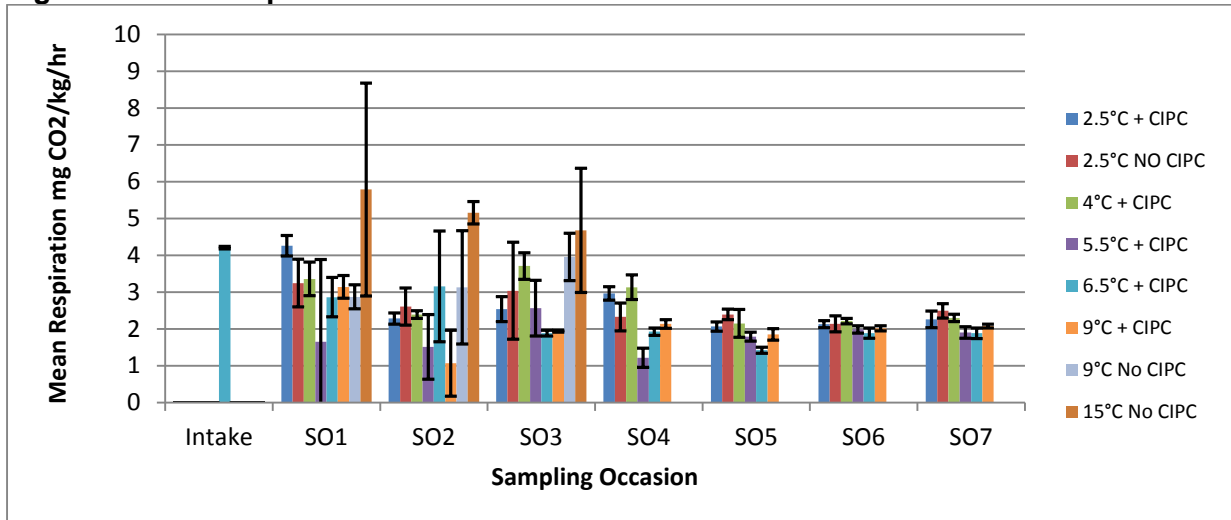
+/- s.d

Figure 1b. Lady Claire



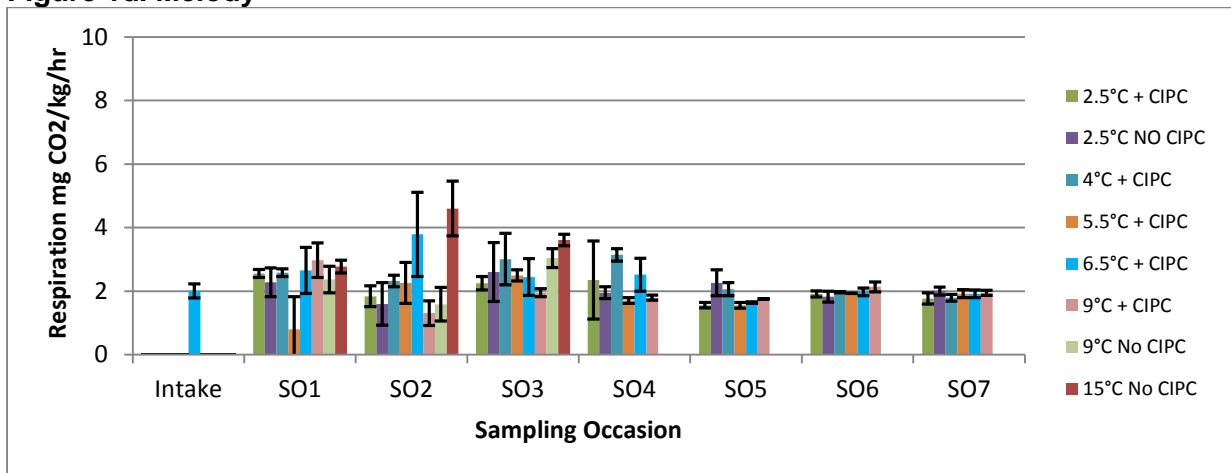
+/- s.d

Figure 1c. Maris Piper



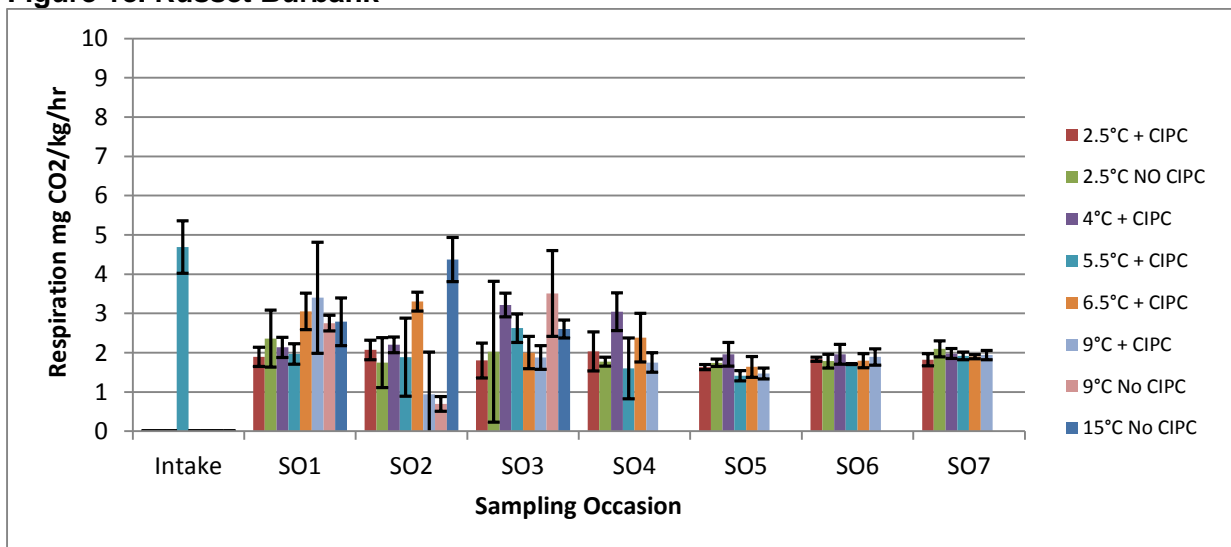
+/ s.d

Figure 1d. Melody



+/ s.d

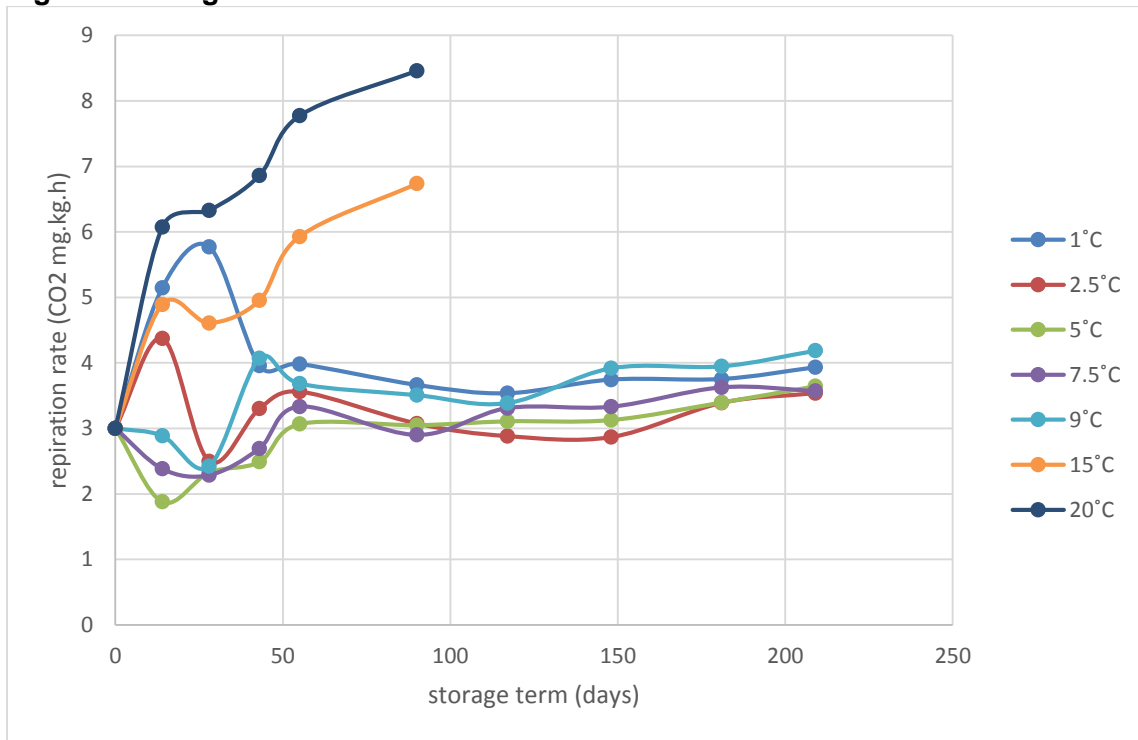
Figure 1e. Russet Burbank



+/ s.d

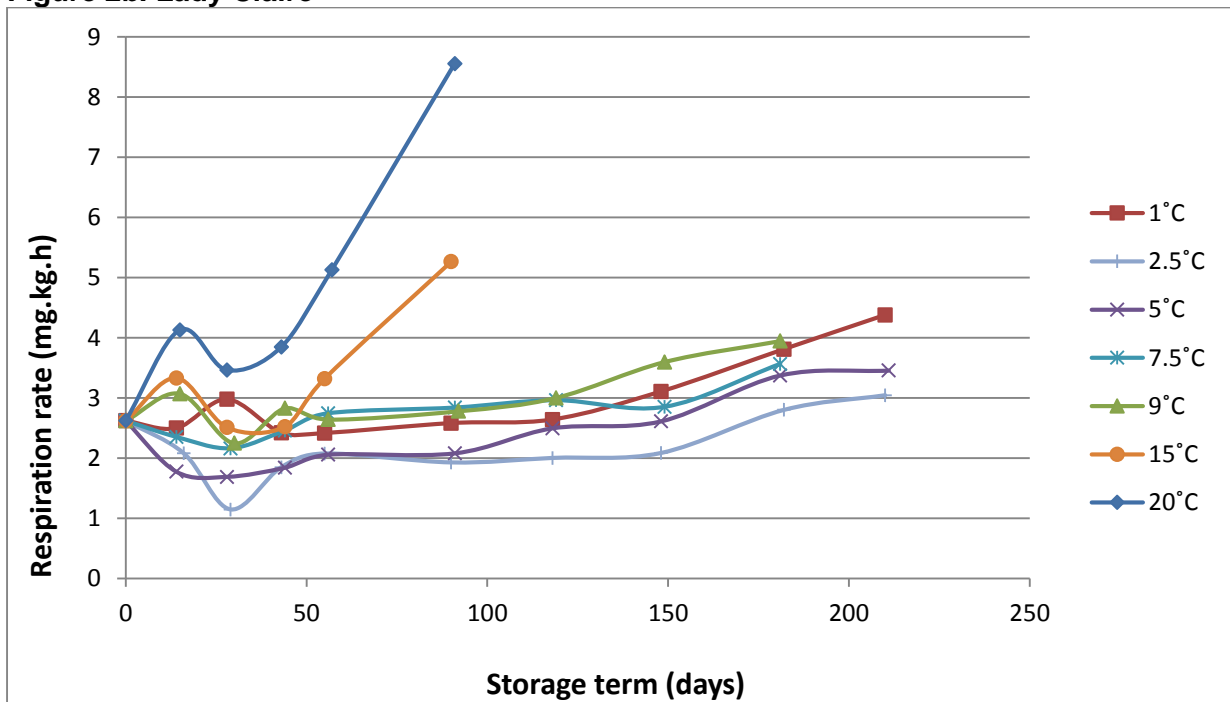
Figures 2a-e. Variety respiration rates at different storage temperatures over monthly storage intervals during 2015-16.

Figure 2a. King Edward



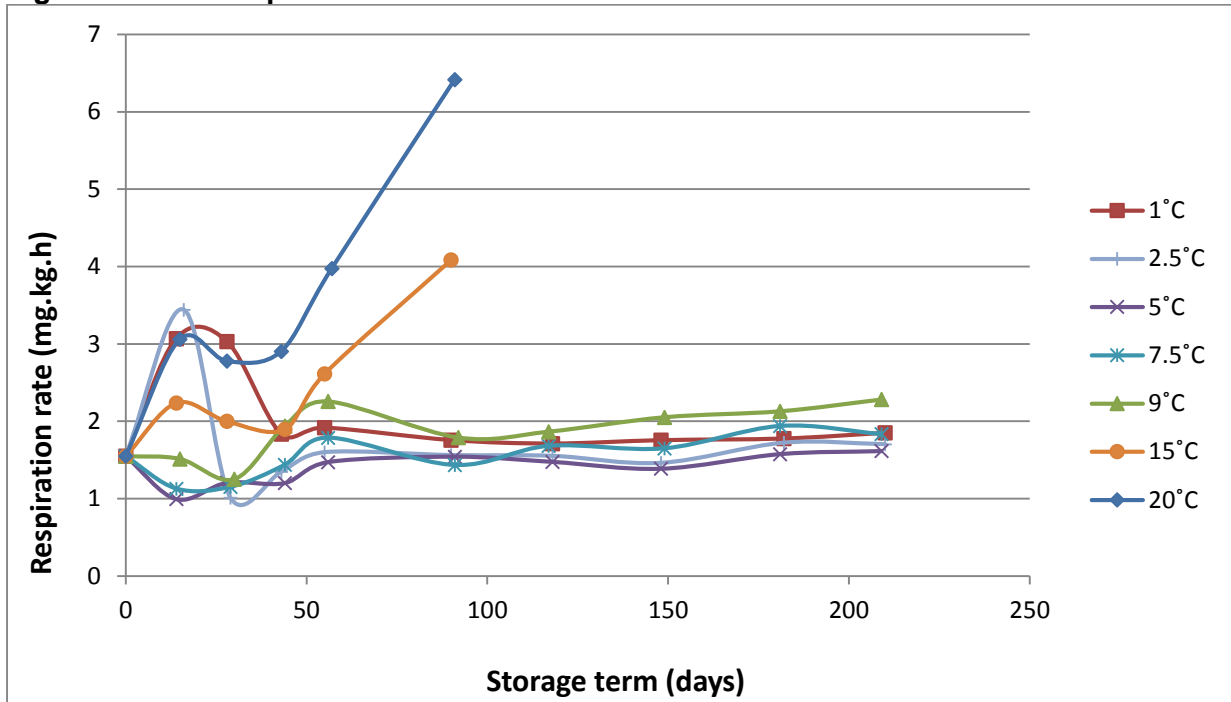
15 and 20 °C trials were halted early because of excessive sprouting.

Figure 2b. Lady Claire



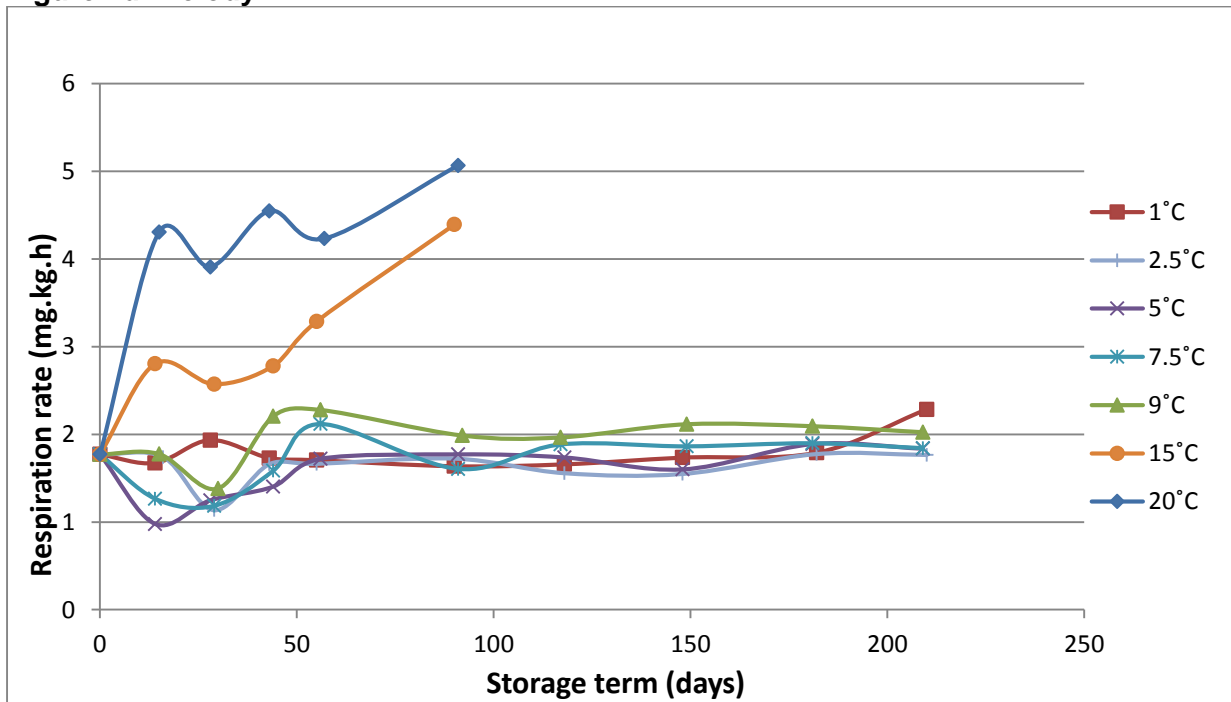
15 and 20 °C trials were halted early because of excessive sprouting.

Figure 2c. Maris Piper



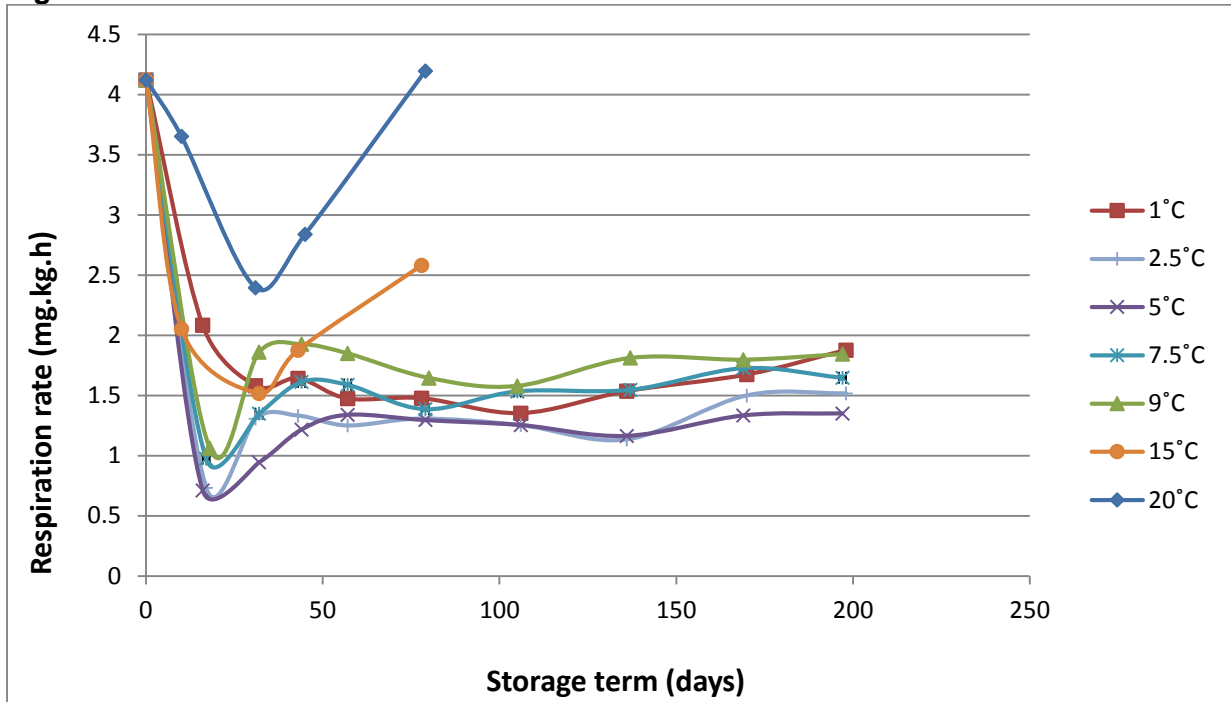
15 and 20 °C trials were halted early because of excessive sprouting.

Figure 2d. Melody



15 and 20 °C trials were halted early because of excessive sprouting.

Figure 2e. Russet Burbank



15 and 20 °C trials were halted early because of excessive sprouting.

Figures 3a - e. 2014-15, variety respiration rates at different storage temperatures after 29 days storage or for Russet Burbank 31 days storage.

Figure 3a. King Edward

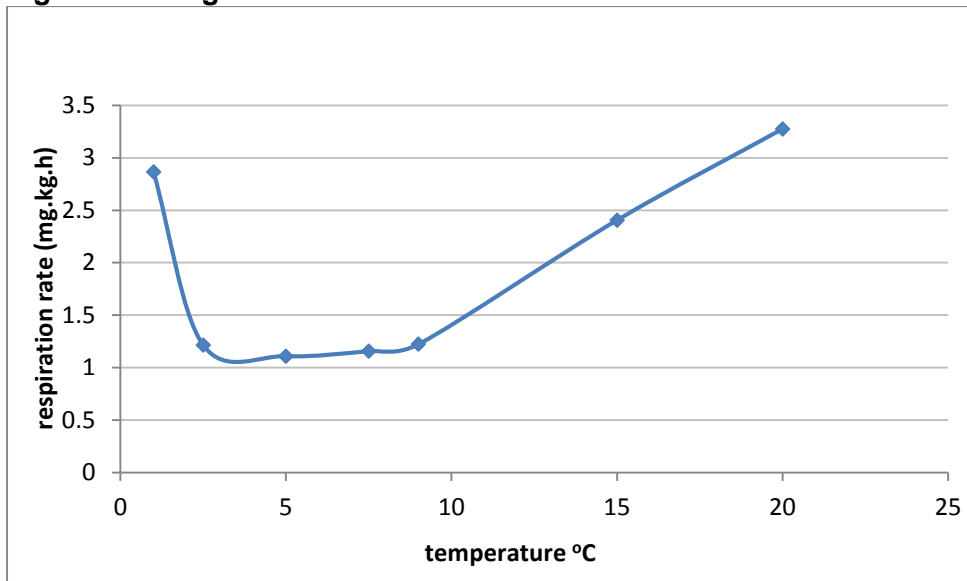


Figure 3b. Lady Claire.

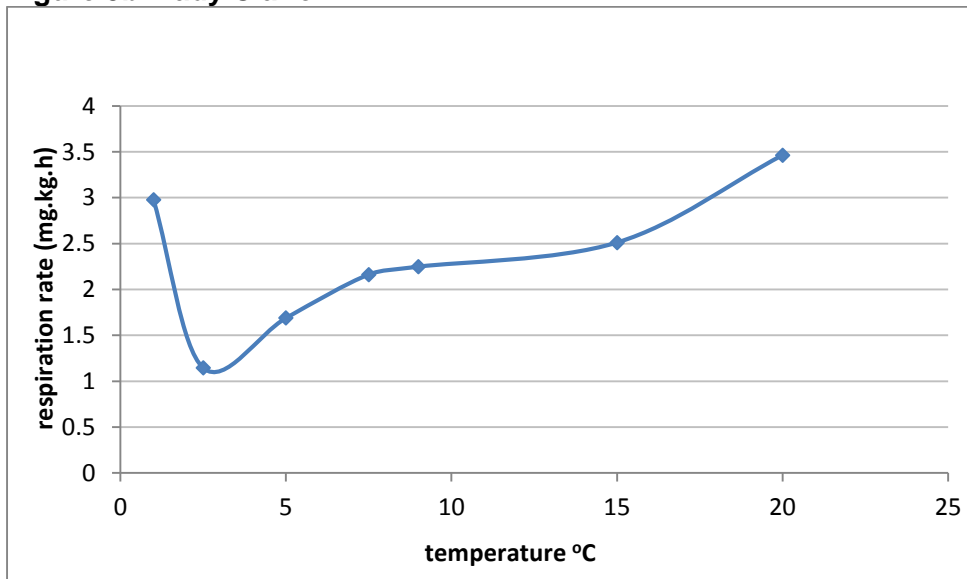


Figure 3c. Maris Piper.

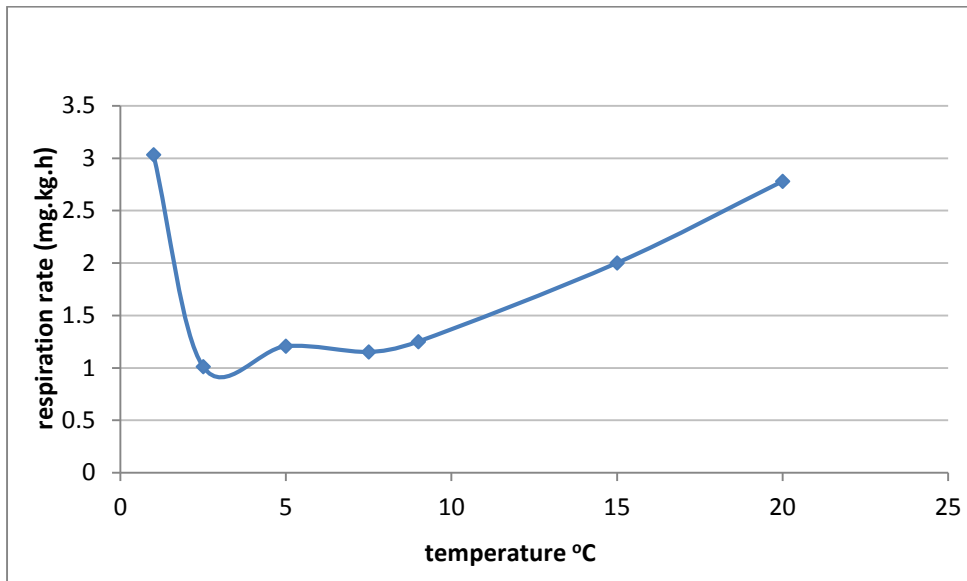


Figure 3d. Melody.

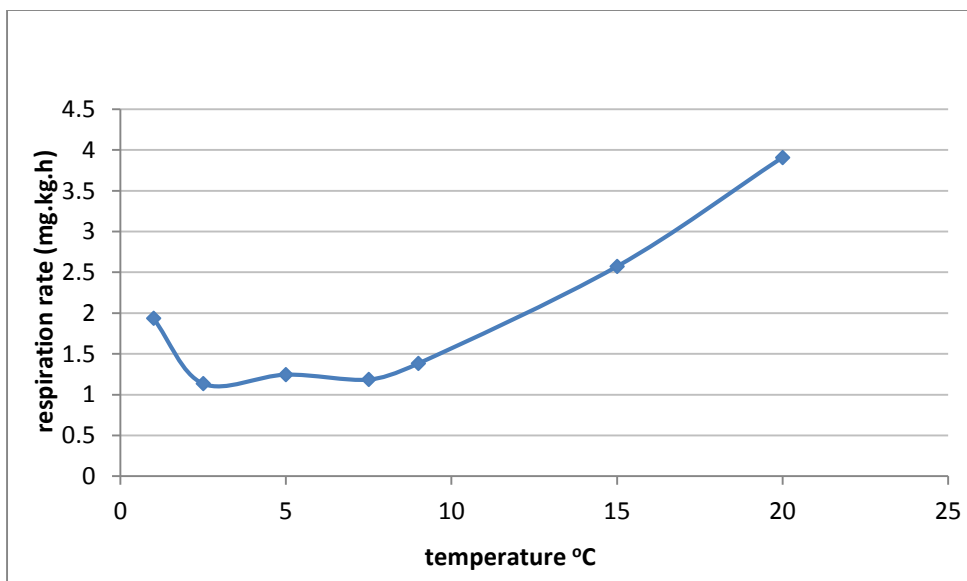
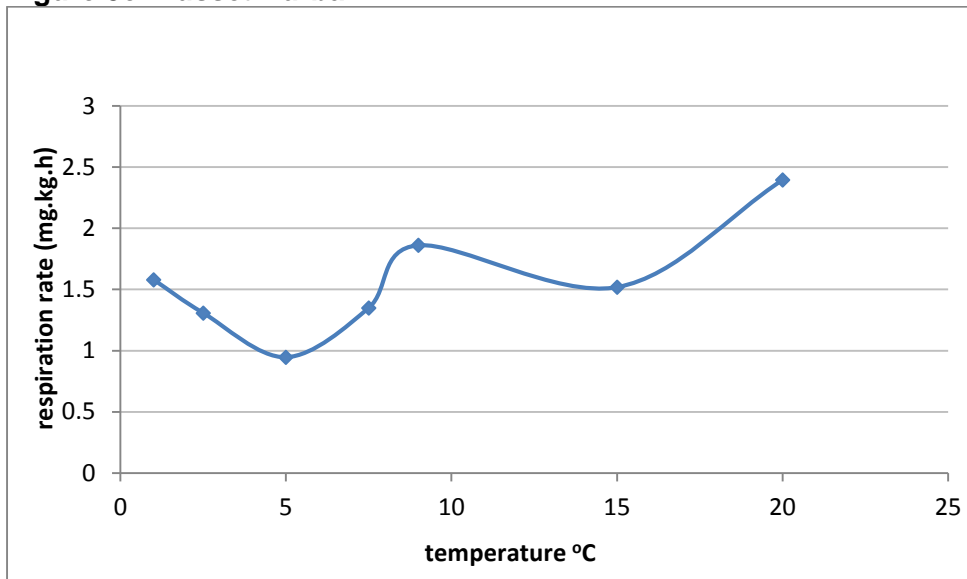


Figure 3e. Russet Burbank.



Figures 4a - e. 2015-16, variety respiration rates at different storage temperatures after 33 days storage or for Russet Burbank 17 days storage.

Figure 4a. King Edward.

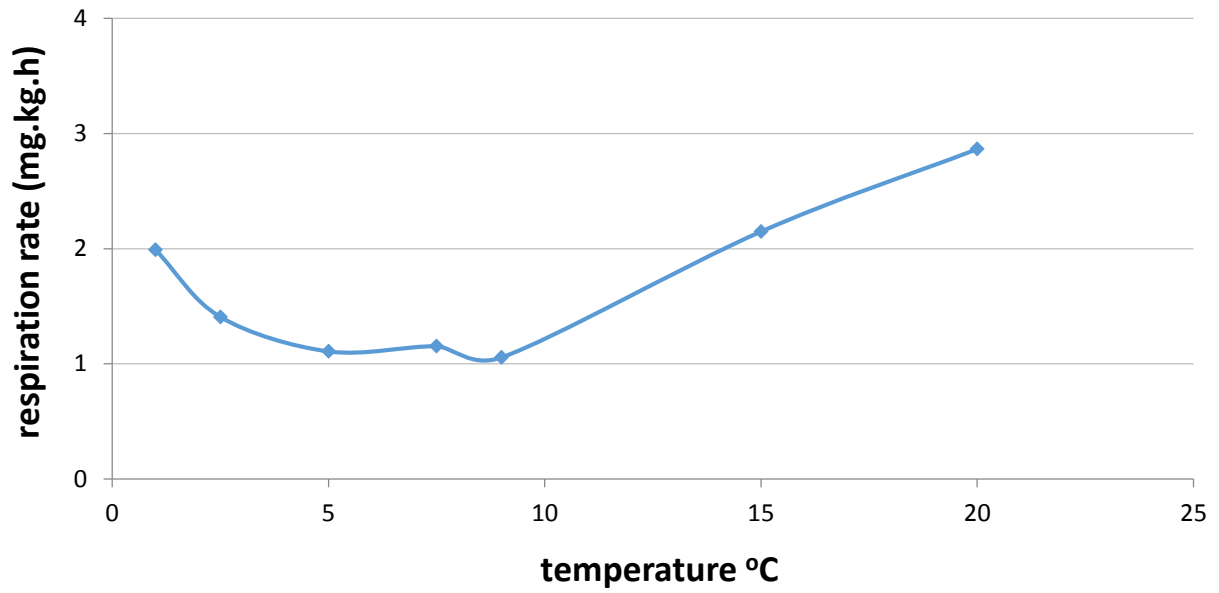


Figure 4b. Lady Claire.

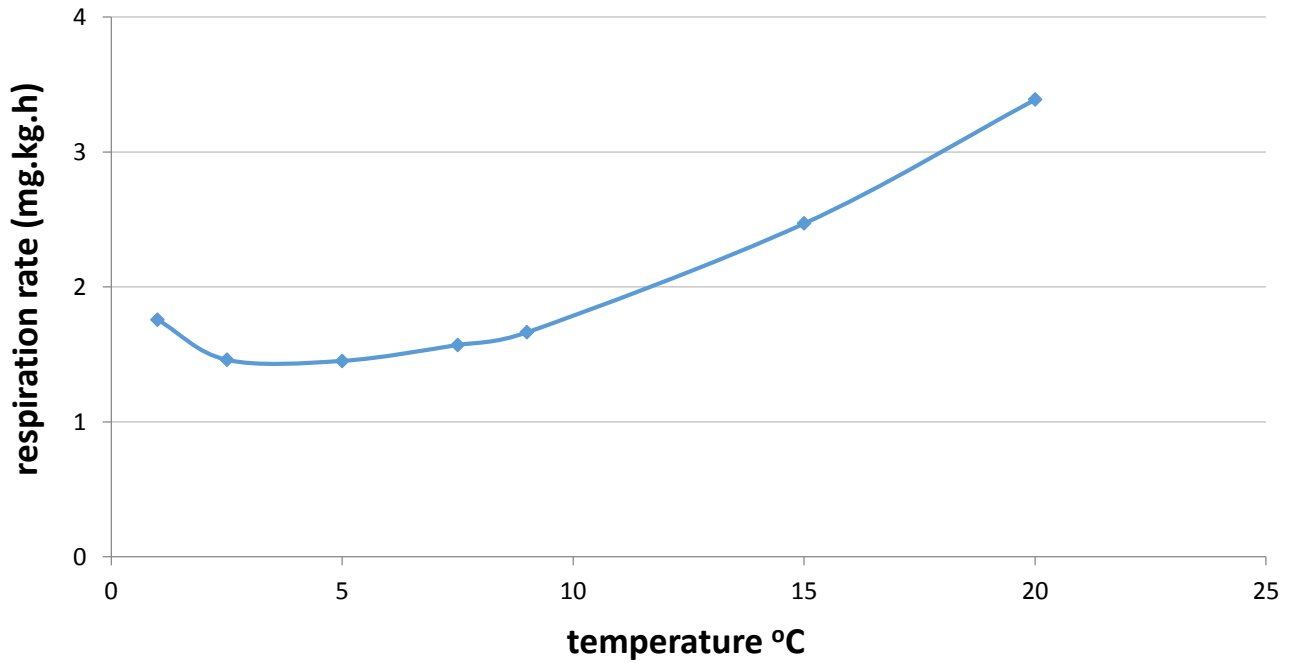


Figure 4c. Maris Piper.

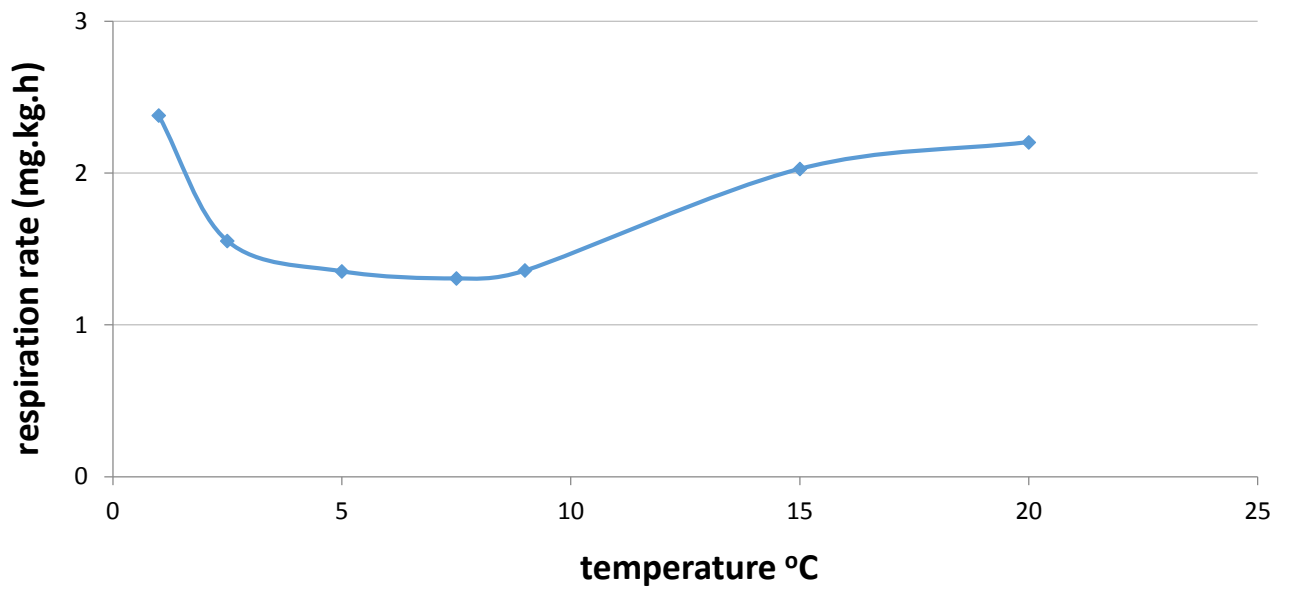


Figure 4d. Melody.

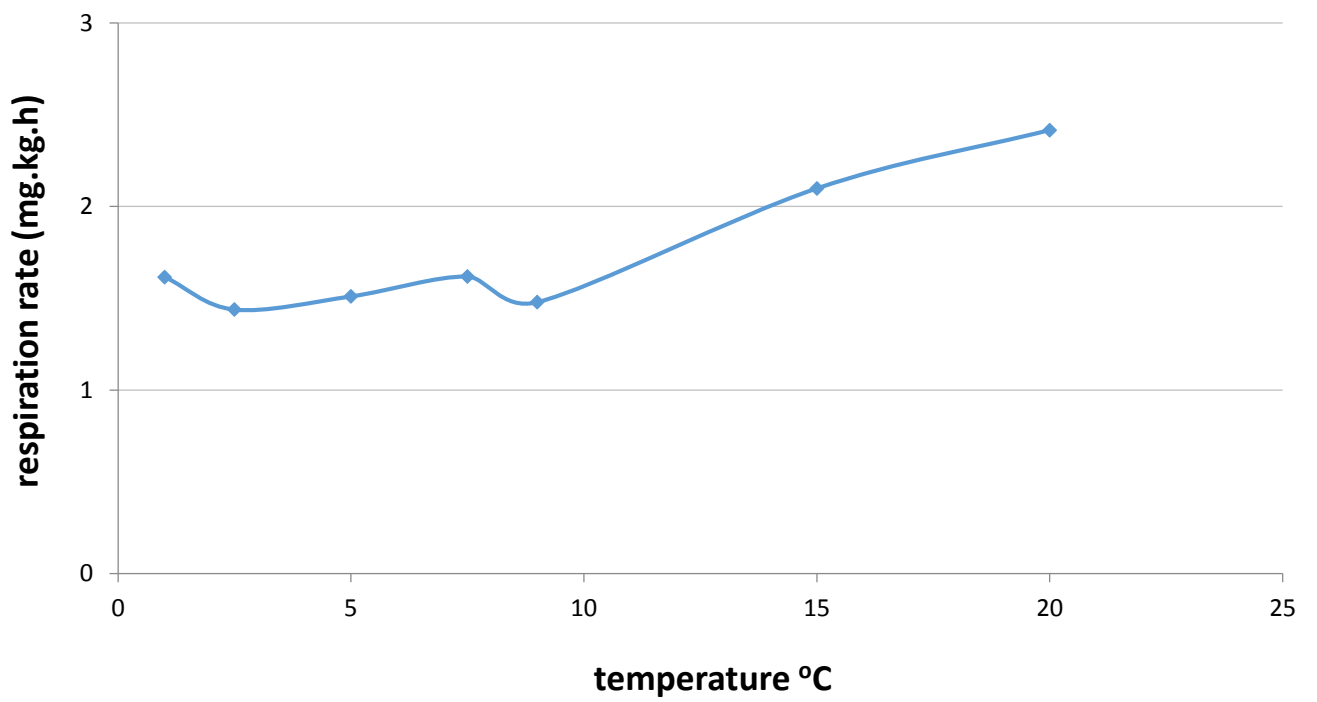
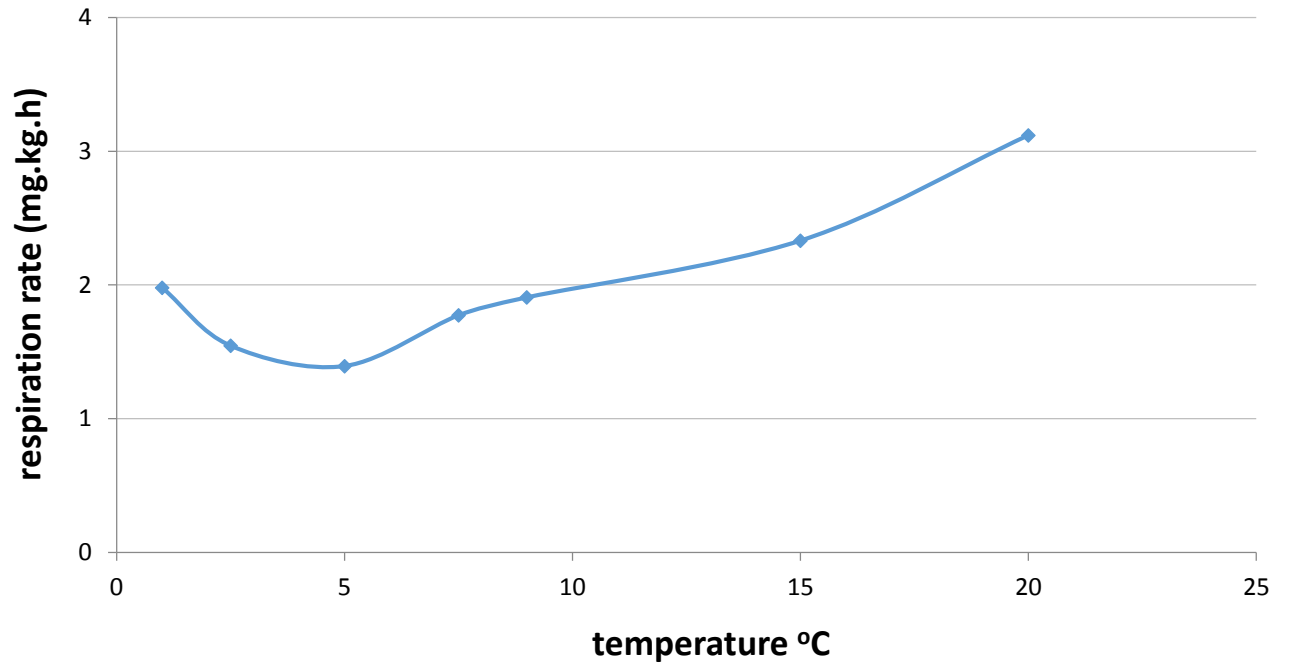


Figure 4e. Russet Burbank



Tables 1a - e. 2014-15, occasions when visible sprouting was observed in all replicate samples for each of the five varieties per storage temperature.

N = no visible sprouting, Y = visible sprouting, X assessment discontinued.

Table 1a. King Edward

SO	Sampling Date	Days of storage	Storage Temperature (°C)						
			1	2.5	5	7.5	9	15	20
Intake	15/10/2014	0	N	N	N	N	N	N	N
SO1	29/10/2014	14	N		N	N		N	
	30/10/2014	15					N		N
	31/10/2014	16		N					
SO2	12/11/2014	28	N		N			N	N
	13/11/2014	29		N		N			
	14/11/2014	30					N		
SO3	27/11/2014	43	N	N					Y
	28/11/2014	44			N	N	N	N	
SO4	09/12/2014	55	N	N				N	
	10/12/2014	56			N	N	N		
	11/12/2014	57							Y
SO5	13/01/2015	90	N	N				N	
	14/01/2015	91			N	N			Y
	15/01/2015	92					Y		
SO6	09/02/2015	117					Y	X	X
	10/02/2015	118	N	N	N			X	X
SO7	12/03/2015	148				N		X	X
	13/03/2015	149	N	N	N			X	X
SO8	14/04/2015	181				N	Y	X	X
	15/04/2015	182	N	N				X	X
SO9	12/05/2015	209			N	Y	Y	X	X
	13/05/2015	210			N	X	X	X	X

Table 1b. Lady Claire

SO	Sampling Date	Days of storage	Storage Temperature (°C)						
			1	2.5	5	7.5	9	15	20
Intake	15/10/2014	0	N	N	N	N	N	N	N
SO1	29/10/2014	14	N		N	N		N	
	30/10/2014	15					N		N
	31/10/2014	16		N					
SO2	12/11/2014	28	N		N			N	N
	13/11/2014	29		N		N			
	14/11/2014	30					N		
SO3	27/11/2014	43	N	N					Y
	28/11/2014	44			N	N	N	N	
SO4	09/12/2014	55	N	N				N	
	10/12/2014	56			N	N	N		
	11/12/2014	57							Y
SO5	13/01/2015	90	N	N				N	
	14/01/2015	91			N	N			Y
	15/01/2015	92					Y		
SO6	09/02/2015	117					Y	X	X
	10/02/2015	118	N	N	N			X	X
SO7	12/03/2015	148				N		X	X
	13/03/2015	149	N	N	N			X	X
SO8	14/04/2015	181				N	Y	X	X
	15/04/2015	182	N	N				X	X
SO9	12/05/2015	209			N	Y	Y	X	X
	13/05/2015	210			N	X	X	X	X

Table 1c. Maris Piper

SO	Sampling Date	Days of storage	Storage Temperature (°C)						
			1	2.5	5	7.5	9	15	20
Intake	15/10/2014	0	N	N	N	N	N	N	N
SO1	29/10/2014	14	N		N	N		Y	
	30/10/2014	15					N		N
	31/10/2014	16		N					
SO2	12/11/2014	28	N		N			Y	N
	13/11/2014	29		N		N			
	14/11/2014	30					N		
SO3	27/11/2014	43	N	N					Y
	28/11/2014	44			N	N	N	Y	
SO4	09/12/2014	55	N	N				Y	
	10/12/2014	56			N	N	N		
	11/12/2014	57							Y
SO5	13/01/2015	90	N	N				Y	
	14/01/2015	91			N	N			Y
	15/01/2015	92					Y		
SO6	09/02/2015	117				N	N	X	X
	10/02/2015	118	N	N	N			X	X
SO7	12/03/2015	148	N	N	N			X	X
	13/03/2015	149				N	N	X	X
SO8	14/04/2015	181			N	N	N	X	X
	15/04/2015	182	N	N				X	X
SO9	12/05/2015	209			N	N	N	X	X
	13/05/2015	210	N	N				X	X

Table 1d. Melody

SO	Sampling Date	Days of storage	Storage Temperature (°C)						
			1	2.5	5	7.5	9	15	20
Intake	15/10/2014	0	N	N	N	N	N	N	N
SO1	29/10/2014	14	N		N	N		N	
	30/10/2014	15					N		N
	31/10/2014	16		N					
SO2	12/11/2014	28	N		N			N	N
	13/11/2014	29		N		N			
	14/11/2014	30					N		
SO3	27/11/2014	43	N	N					Y
	28/11/2014	44			N	N	N	N	
SO4	09/12/2014	55	N	N				N	
	10/12/2014	56			N	N	N		
	11/12/2014	57							Y
SO5	13/01/2015	90	N	N				N	
	14/01/2015	91			N	N			Y
	15/01/2015	92					Y		
SO6	09/02/2015	117				N	N	X	X
	10/02/2015	118	N	N	N			X	X
SO7	12/03/2015	148	N	N	N			X	X
	13/03/2015	149				N	N	X	X
SO8	14/04/2015	181			N	N	N	X	X
	15/04/2015	182	N	N				X	X
SO9	12/05/2015	209			N	N	N	X	X
	13/05/2015	210	N	N				X	X

Table 1e. Russet Burbank

SO	Sampling Date	Days of storage	Storage Temperature (°C)						
			1	2.5	5	7.5	9	15	20
Intake	15/10/2014	0	N	N	N	N	N	N	N
SO1	29/10/2014	14	N		N				N
	30/10/2014	15		N		N		N	
	31/10/2014	16					N		
SO2	12/11/2014	28	N	N					Y
	13/11/2014	29			N	N	N	N	
	14/11/2014	30	N	N				N	
SO3	27/11/2014	43			N	N	N		
	28/11/2014	44							Y
SO4	09/12/2014	55	N	N	N	N	N		
	10/12/2014	56	N	N				N	
	11/12/2014	57			N	N			Y
SO5	13/01/2015	90					Y		
	14/01/2015	91				N	N	X	X
	15/01/2015	92	N	N	N			X	X
SO6	09/02/2015	117	N	N	N			X	X
	10/02/2015	118				N	N	X	X
SO7	12/03/2015	148			N	N	N	X	X
	13/03/2015	149	N	N				X	X
SO8	14/04/2015	181			N	N	N	X	X
	15/04/2015	182	N	N				X	X
SO9	12/05/2015	209	N	N	N	N	N	N	N
	13/05/2015	210	N		N				N

Tables 2a - e. 2015-16, occasions when visible sprouting was observed in all replicate samples for each of the five varieties per storage temperature.

N = no visible sprouting, Y = visible sprouting, X assessment discontinued.

Table 2a. King Edward

SO	Date of assessment	Days of storage	Storage Temperature (°C)							
			1	2.5	5	7.5	9	15 NO CIPC	15 + CIPC	20
Intake	23/09/2015	0	N	N	N	N	N	N	N	N
2 weeks	05/10/2015	12	N	N	N	N				
	06/10/2015	13					N	Y	N	Y
3 weeks	14/10/2015	21						Y		Y
5 weeks	26/10/2015	33			Y	Y		Y		Y
	27/10/2015	34	Y	Y			Y		Y	
7 weeks	09/11/2015	47	N	N				Y		
	10/11/2015	48			N	N			N	
	11/11/2015	49					N			Y
9 weeks	23/11/2015	61	N	N	N			X		X
	24/11/2015	62				N		X	N	X
	25/11/2015	63					N	X		X
10 weeks	07/12/2015	75	N					X	N	X
	08/12/2015	76		N	N	N		X		X
	09/12/2015	77					N	X		X
3 months	04/01/2016	103	N	N	N			X		X
	05/01/2016	104				N	N	X	N	X
4 months	01/02/2016	131					N	X	N	X
	02/02/2016	132	N	N				X		X
	03/02/2016	133			N	N		X		X
5 months	29/02/2016	159	N		N	N		X		X
	01/03/2016	160		N			N	X	N	X
6 months	04/04/2016	194	N		N		N	X		X
	07/04/2016	197		N		N		X	N	X
7 months	03/05/2016	223	N		N			X	N	X
	04/05/2016	224		N		N		X		X
	05/05/2016	225					N	X		X

Table 2b. Lady Claire

SO	Date of assessment	Days of storage	Storage Temperature (°C)							
			1	2.5	5	7.5	9	15 NO CIPC	15 + CIPC	20
Intake	23/10/2015	0	N	N	N	N	N	N	N	N
2 weeks	09/11/2015	17						N		
	10/11/2015	18			N	N				
	11/11/2015	19	N				N			
	12/11/2015	20		N						
	13/11/2015	21							N	
	16/11/2015	24								N
3 weeks										
5 weeks	23/11/2015	31	N	N	N					
	24/11/2015	32				N		N	N	N
	25/11/2015	33					N			
7 weeks	07/12/2015	45	N					Y	N	Y
	08/12/2015	46		N	N	N				
	09/12/2015	47					N			
9 weeks	17/12/2015	55	N	N	N	N	N	Y	N	Y
10 weeks	04/01/2016	73	N	N	N			X		X
	05/01/2016	74				N	N	X	N	X
3 months	01/02/2016	101					N	X	Y	X
	02/02/2016	102	N	N				X		X
	03/02/2016	103			N	N		X		X
4 months	29/02/2016	129	N		N	N		X		X
	01/03/2016	130		N			N	X	Y	X
5 months	04/04/2016	164	N		N			X	X	X
	07/04/2016	167		N		N		X	X	X
	11/04/2016	171					N	X	X	X
6 months	03/05/2016	193	N		N			X	X	X
	04/05/2016	194		N		N		X	X	X

Table 2c. Maris Piper

SO	Date of assessment	Days of storage	Storage Temperature (°C)							
			1	2.5	5	7.5	9	15 NO CIPC	15 + CIPC	20
Intake	23/09/2015	0	N	N	N	N	N	N	N	N
2 weeks	05/10/2015	12	N	N	N	N				
	06/10/2015	13					N	N	N	N
3 weeks	14/10/2015	21						N		N
5 weeks	26/10/2015	33			N	N		N		N
	27/10/2015	34	N	N			N		N	
7 weeks	09/11/2015	47	N	N				Y		
	10/11/2015	48			N	N			N	
	11/11/2015	49					N			Y
9 weeks	23/11/2015	61	N	N	N			X		X
	24/11/2015	62				N		X	N	X
	25/11/2015	63					N	X		X
10 weeks	07/12/2015	75	N					X	N	X
	08/12/2015	76		N	N	N		X		X
	09/12/2015	77					N	X		X
3 months	04/01/2016	103	N	N	N			X		X
	05/01/2016	104				N	N	X	N	X
4 months	01/02/2016	131						N	X	X
	02/02/2016	132	N	N				X		X
	03/02/2016	133			N	N		X		X
5 months	29/02/2016	159	N		N	N		X		X
	01/03/2016	160		N			N	X	N	X
6 months	04/04/2016	194	N		N			X	X	X
	07/04/2016	197		N		N	Y	X	X	X
7 months	03/05/2016	223	N		N			X	X	X
	04/05/2016	224		N		N		X	X	X
	05/05/2016	225					N	X	X	X

Table 2d. Melody

SO	Date of assessment	Days of storage	Storage Temperature (°C)							
			1	2.5	5	7.5	9	15 NO CIPC	15 + CIPC	20
Intake	25/09/2015	0	N	N	N	N	N	N	N	N
2 weeks	05/10/2015	10	N	N	N	N				
	06/10/2015	11					N	N	N	N
3 weeks	14/10/2015	19						N		N
5 weeks	26/10/2015	31			N	N		N		N
	27/10/2015	32	N	N			N		N	
7 weeks	09/11/2015	45	N	N				Y		
	10/11/2015	46			N	N			N	
	11/11/2015	47					N			Y
9 weeks	23/11/2015	59	N	N	N			X		X
	24/11/2015	60				N		X	N	X
	25/11/2015	61					N	X		X
10 weeks	07/12/2015	73	N					X	N	X
	08/12/2015	74		N	N	N		X		X
	09/12/2015	75					N	X		X
3 months	04/01/2016	101	N	N	N			X		X
	05/01/2016	102				N	N	X	N	X
4 months	01/02/2016	129						N	X	X
	02/02/2016	130	N	N				X		X
	03/02/2016	131			N	N		X		X
5 months	29/02/2016	157	N		N	N		X		X
	01/03/2016	158		N			N	X	N	X
6 months	04/04/2016	192	N		N			N	X	X
	07/04/2016	195		N		N		X	Y	X
7 months	03/05/2016	221	N		N			X	Y	X
	04/05/2016	222		N		N		X		X
	05/05/2016	223					N	X		X

Table 2e. Russet Burbank

SO	Date of assessment	Days of storage	Storage Temperature (°C)							
			1	2.5	5	7.5	9	15 NO CIPC	15 + CIPC	20
Intake	23/10/2015	0	N	N	N	N	N	N	N	N
2 weeks	09/11/2015	17						N		
	10/11/2015	18			N	N			N	
3 weeks	11/11/2015	19	N				N			
	12/11/2015	20		N						N
5 weeks	23/11/2015	31	N	N	N					
	24/11/2015	32				N		N	N	N
7 weeks	25/11/2015	33					N			
	07/12/2015	45	N					Y	N	Y
	08/12/2015	46		N	N	N				
	09/12/2015	47					N			
9 weeks	17/12/2015	55	N	N	N	N	N	N	N	Y
10 weeks	04/01/2016	73	N	N	N			X		X
	05/01/2016	74				N	N	X	N	X
3 months	01/02/2016	101					N	X	Y	X
	02/02/2016	102	N	N				X		X
	03/02/2016	103			N	N		X		X
4 months	29/02/2016	129	N		N	N		X	X	X
	01/03/2016	130		N			N	X	X	X
5 months	04/04/2016	164	N		N			X	X	X
	07/04/2016	167		N		N		X	X	X
	11/04/2016	171					N	X	X	X
6 months	03/05/2016	193	N		N			X	X	X
	04/05/2016	194		N		N		X	X	X
	05/05/2016	195					N	X	X	X

Figure 5a - c. Mean respiration by variety for all years in which common storage treatment trials (2.5, 5.0/5.5 and 9.0 C) were conducted.
 Y axis respiration rate (mg CO₂.kg.h).

Figure 5a. 2.5 C No CIPC.

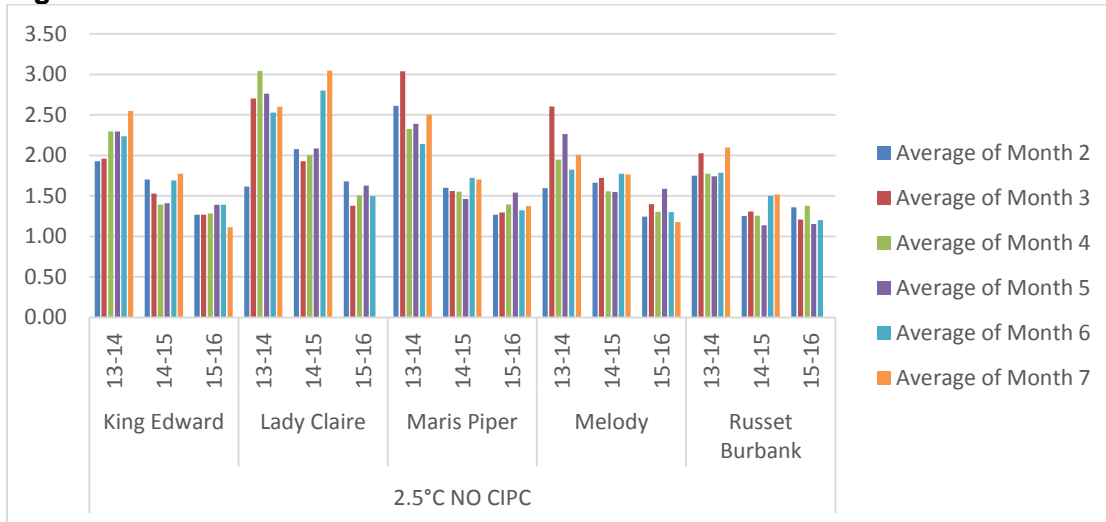


Figure 5b. 5.0 / 5.5 C, + CIPC.

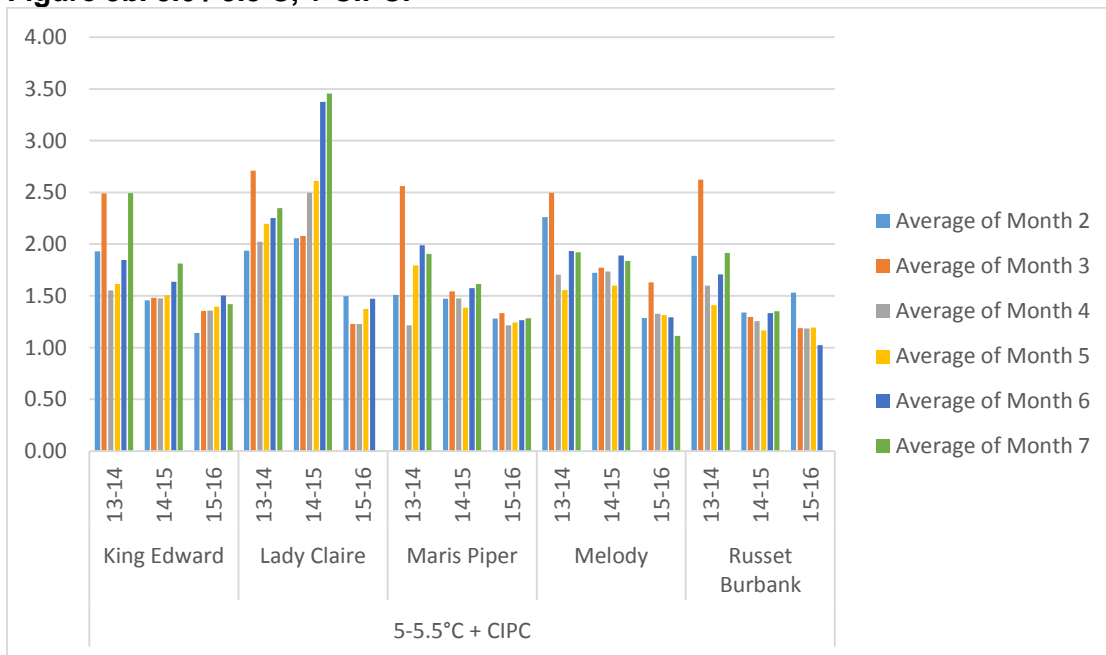


Figure 5c. 9.0 C, + CIPC.

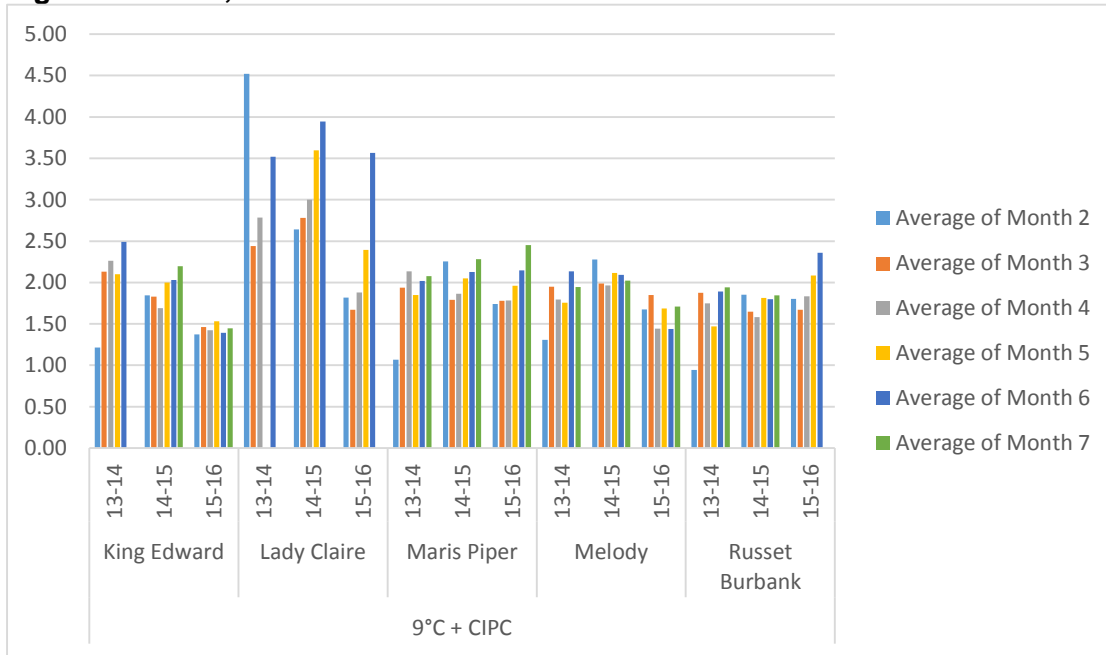


Figure 6a - e. Comparison years 2014-15 and 2015-16. Mean respiration by variety, year and storage term per storage temperature.
 Y axis respiration rate (mg CO₂.kg.h).

Figure 6a. Storage at 1 C, NO CIPC.

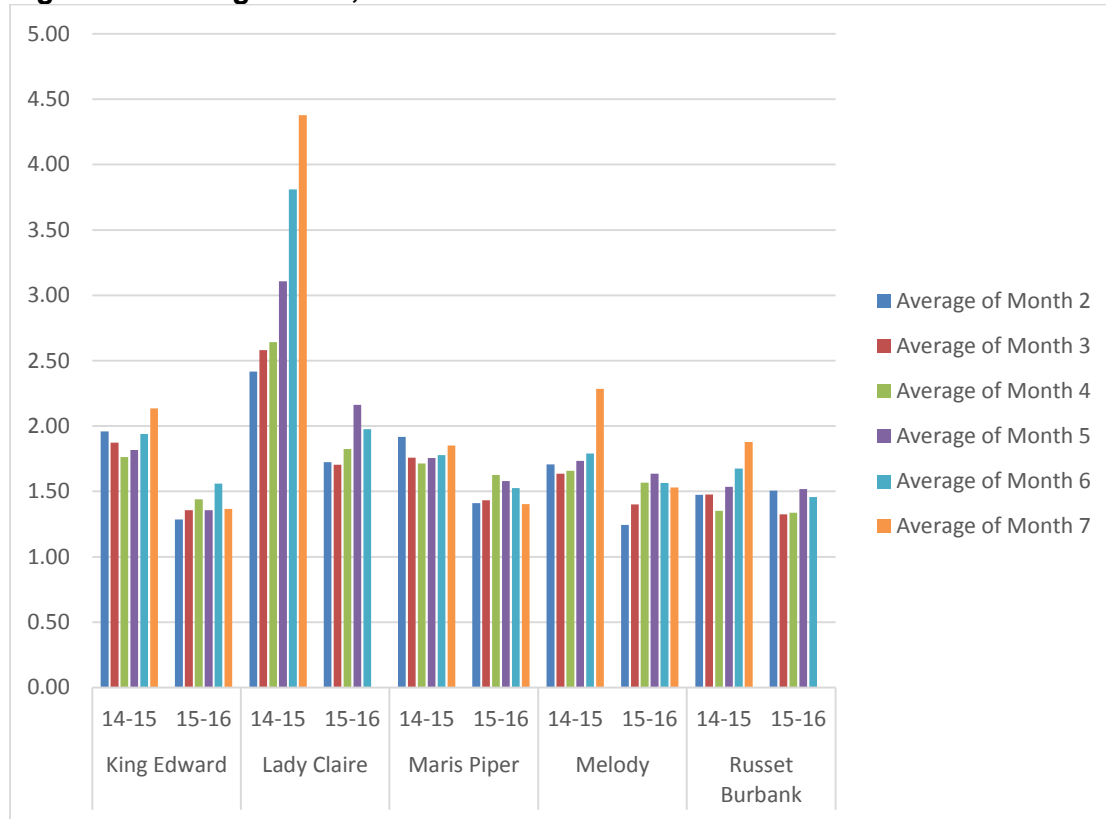


Figure 6B. Storage at 2.5 C, NO CIPC.

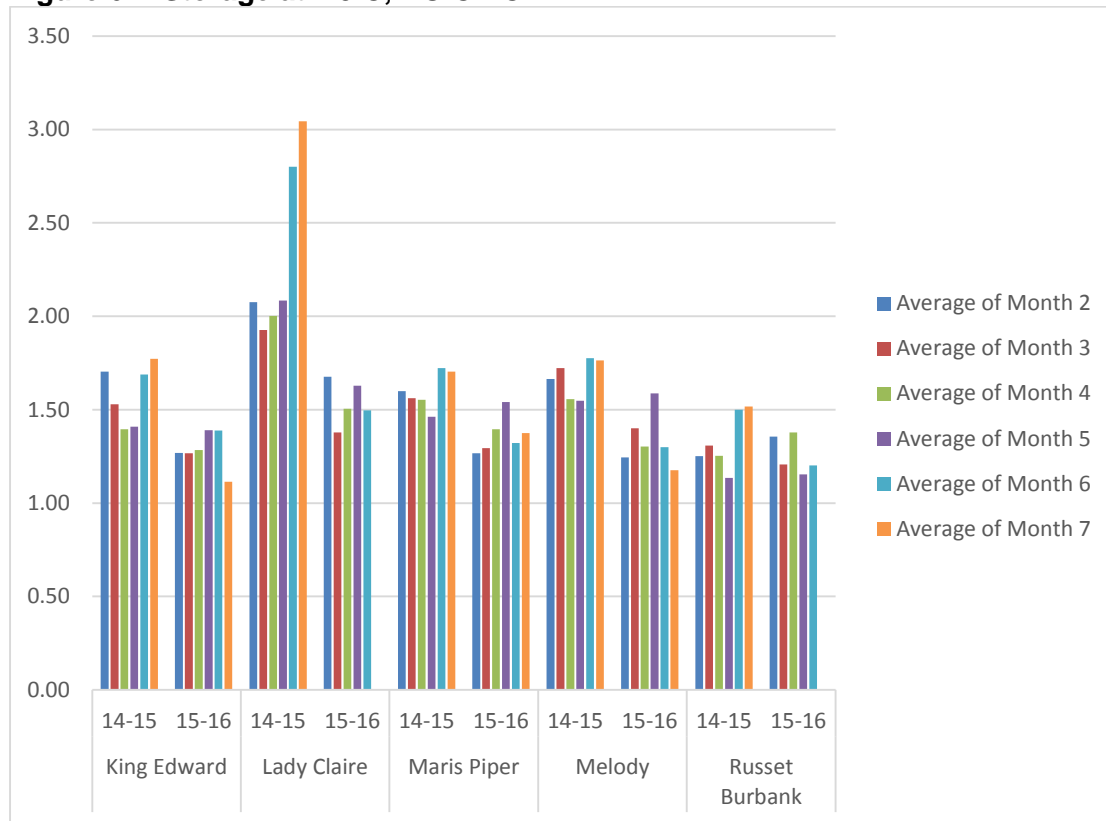


Figure 6C. Storage at 5 C + CIPC.

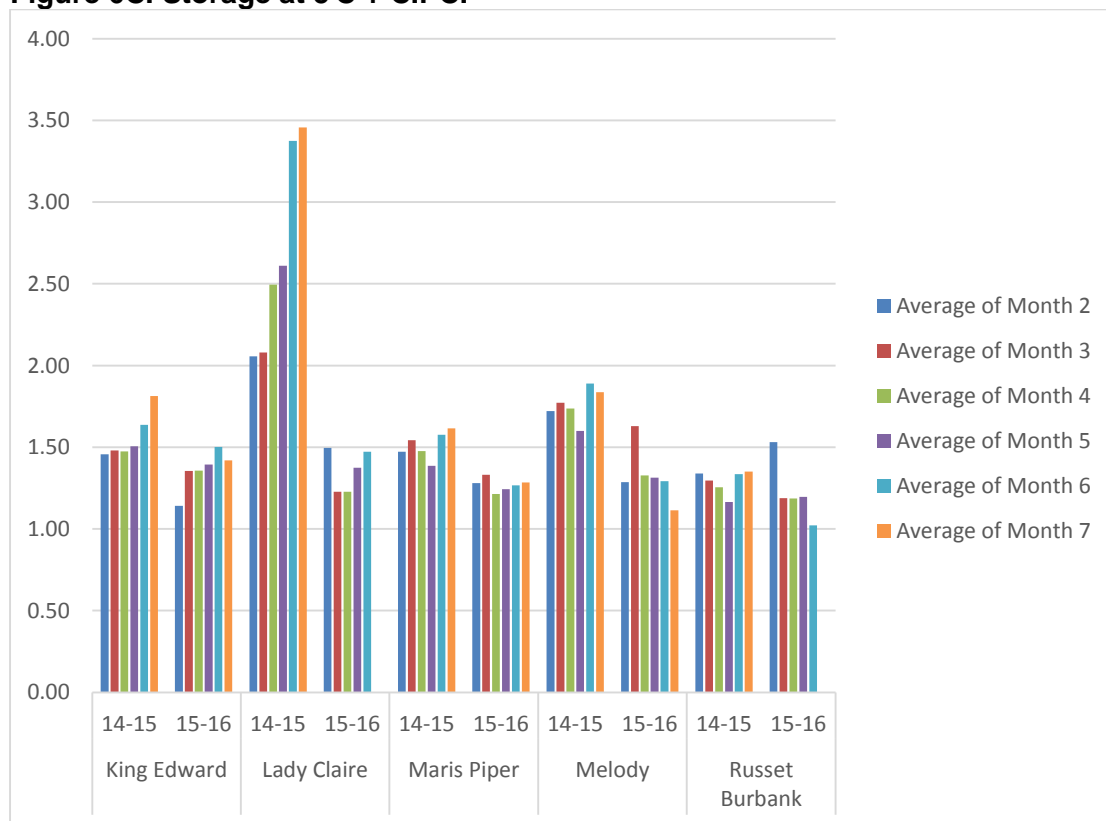


Figure 6a. Storage at 7.5 C + CIPC.

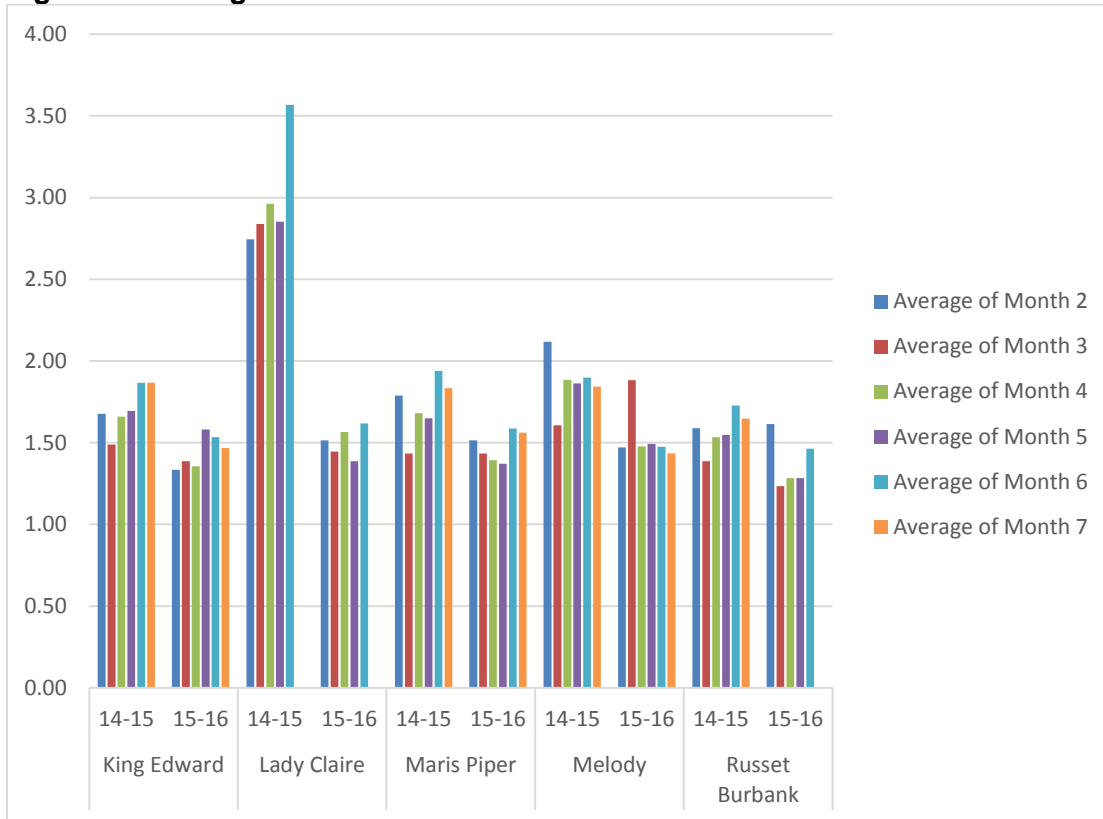


Figure 6e. Storage at 9.0 C + CIPC.

