

Corn Maturity and Dry Down in Southwestern Ontario

Key Findings:

- Trial locations accumulated an average of 332 GDUs over the 4-week study period and lost an average of 9.6 points of grain moisture.
- Average dry down rate was most rapid during the first week of the study and subsequently slowed.
- Shorter CRM hybrids dried slightly earlier than longer CRM hybrids, as would be expected; however, differences were not large.



Table 1. Planting dates and comparative relative maturity of hybrids planted at dry down study locations in 2021.

Planting Date	Hybrid Comparative Relative Maturity												
	95	96	98	99	100	101	103	104	105	107	108	109	111
	————— number of hybrids —————												
May 11	1		1	1	2		1	5		1	1		
May 13	1		1	1	2		1	2	1				
May 5	1	1	1	2	2		1	3		1			
Apr 24			1	1	2	1	1	3					
May 1			1	1	4	1	2	2	1				
May 4			1	1	2			2					
May 2			1		3	2	1	4	1	1			
May 13			1	2	2	1	1	3	1				
May 14			1	1	2	1		3	1				
May 12			1	1	3	1	1	4	1	1	2	2	
May 13			1	1	2		1	2		1			
May 17			1	1	2	1		2					
May 2				1	2	1	1	3	1	1	1		
May 6				1	2		1	1					
May 16				1	3		1	1					
Apr 27					2	1		1		1	1	1	
May 1					2			3					
May 3					2		1	3		1	1	1	
May 12					1		1	1		1			
May 12					1		1	1		1			
May 13					2		1	2	1	1			
May 17					1		1	1		1			
May 18					1		1	1	1	1	1	1	1
May 19							1	2	1				
May 18							2		1	2	2		

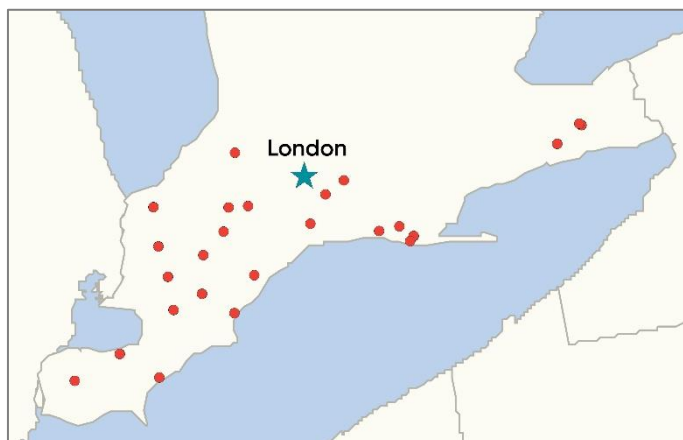


Figure 1. Dry down study locations in Southwestern Ontario in 2021.

2021 Corn Dry Down Field Research

- Corn ear samples were collected from 25 field trial locations across Southwestern Ontario to measure the rate of in-field drying prior to harvest in 2021.
- Each field trial included at least four different hybrids ranging in comparative relative maturity (CRM) from 95 to 111 (Table 1).
- Planting dates of field trials ranged from April 24 to May 19.
- Representative ears were sampled from each hybrid in the trial four times: Sept. 26, Oct. 3, Oct. 10, and Oct. 17, and a fifth time on Oct. 23 at 9 of the locations.
- Sampled ears were hand-shelled and grain moisture was measured using benchtop moisture testing equipment or a calibrated moisture tester.
- Accumulated growing degree units (GDUs) for each trial location were estimated using the GDU calculator at <https://www.pioneer.com/us/tools-services/growing-degree-unit.html>

Results

- Trial locations accumulated an average of 332 GDUs over the course of the study period: 101 in week 1, 108 in week 2, 71 in week 3, and 52 in week 4 (Figure 2).
- Average grain moisture across all locations and hybrids was 31.6% at the start of the study and 22.0% at the end of the study, meaning that grain dried down an average of 1 point per 34.6 GDUs (Figure 2).
- Average dry down rate was much more rapid during the first week of the study (4.6 pts) than the second week (1.8 pts) even though average GDU accumulation was no greater, illustrating the fact that drying rate is affected by factors other than just temperature, including rainfall, wind, and cloud cover (Figure 3).

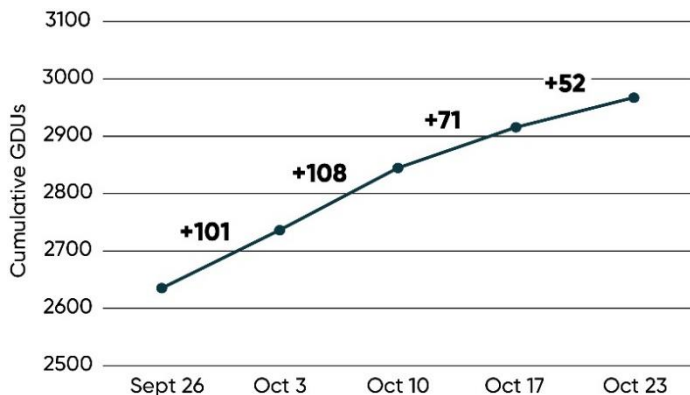


Figure 2. Average cumulative GDUs since planting across trial locations on the five moisture sampling dates.

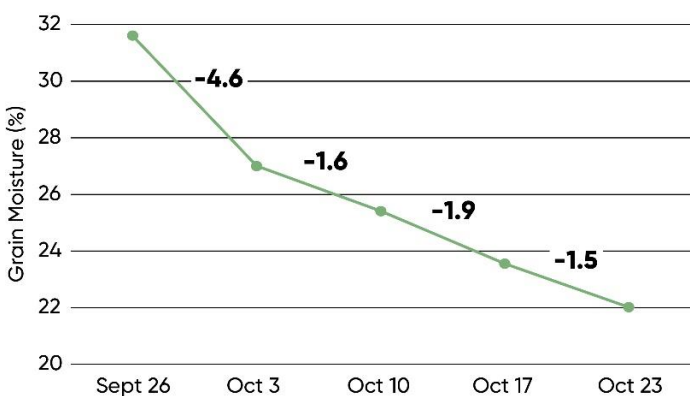


Figure 3. Average grain moisture across all trial locations and hybrids on the five moisture sampling dates.

Hybrid Maturity Effect

- Grain drying dynamics were not greatly affected by hybrid maturity (CRM).
- Shorter CRM hybrids dried slightly earlier than longer CRM hybrids, as would be expected (Figure 4); however, differences were not large.
- 99-101 CRM hybrids were an average of 0.8 pts drier than 103-104 CRM and 1.1 pts drier than 105-109 CRM hybrids across sampling dates.
- Dry down rates were similar among 99-101, 103-104, and 105-109 CRM hybrids.

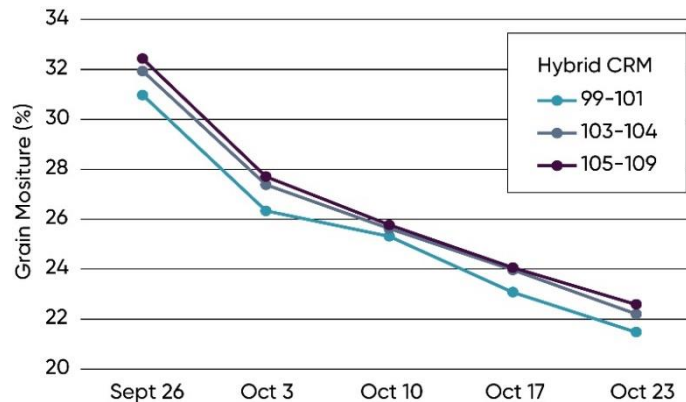


Figure 4. Average grain moisture by hybrid comparative relative maturity (CRM) on the five moisture sampling dates.

Planting Date Effect

- Early planting did not provide an advantage in GDU accumulation (data not shown) or corn grain dry down (Figure 5).
- Figure 4 shows average grain moisture of 104 CRM hybrids (which were represented at all study locations) on October 3.
- Grain moisture varied widely among locations but was not influenced by planting date.
- These results differ from those of a similar study conducted in 2020 in which early planting provided a clear advantage in grain dry down (Hermans and Olbach, 2021).
- The lack of a discernible planting date effect on grain moisture in this study is likely attributable to the relatively large study area and site-to-site variability in growing season conditions.

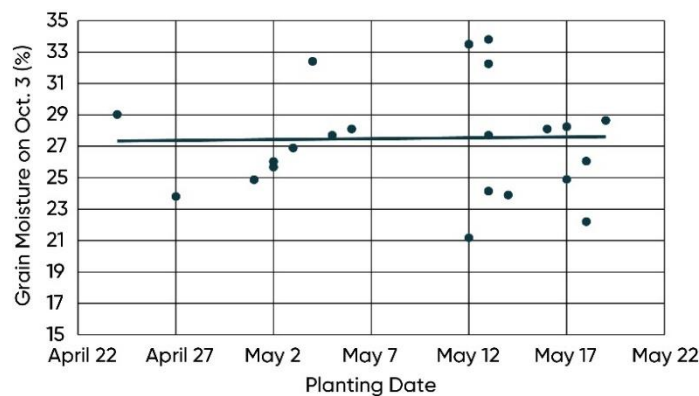


Figure 5. Effect of planting date on average moisture of 104 CRM hybrids measured on October 3 across 25 locations.

Reference

Hermans, P., and C. Olbach. 2021. Corn maturity and dry down in Ontario. Pioneer Agronomy Research Update. Vol. 11 No. 1.

Thank you to the following Pioneer Sales Agents for their participation in this study: A.G. Pasztor & Sons Farm Supply Ltd, Anderson Family Seeds Inc, Better Field Solutions Inc, Blonde Seed, Bo Seeds, Brady Acres (Merlin) Inc, Chris Renwick, Crooked Creek Acres Inc., Elliott Shetland Farms Ltd, Gralex Agronomy, Greg & Jocelyn Underhill, Keilcroft Farm Inc, Leigh Irwin, Leo Guilbeault Farms Ltd., McAlpine Seeds Ltd, Merrick Seeds Ltd, Neil Rose, North Middlesex Seed Solutions Inc, Petker Farms, Glan Valley Farms Ltd, Roodzant Seed Services Inc, Santo Farms Seed Company Inc, Stuart MacMillan, Tillvalley Farms Inc, Twenty View Farms Inc, and Weslane Farms Inc.