

Ontario Corn Committee Hybrid DON Testing in 2018

Purpose

- Although 2018 was very challenging to growers and the rest of the corn industry, it presented an opportunity to compare hybrids for DON accumulation across several locations of the Ontario Corn Performance Trials. The main purpose of the OCC study was to provide growers with an indication of a hybrid's relative risk for accumulating the mycotoxin DON, and to provide a framework for future performance testing.

OCC locations and data collection

- A total of 1,225 grain corn samples were collected while machine harvesting plots for OCC Tables 4 (82 hybrids at Belmont, Exeter, Ilderton) and Table 5 (54 hybrids at Ridgetown and Tilbury) locations. There were 30 hybrids common across both Tables. Each hybrid was replicated 3 times at each location; therefore, each hybrid was represented by 9 samples across locations in OCC Table 4, and 6 samples across OCC Table 5 locations. Samples were dried and then analyzed for DON by SGS Laboratories (Guelph) using the ELISA method. Agronomic practices at each location can be found in the trial management section of the 2018 OCC Corn Performance Report at www.gocorn.net.
- Hybrids silked between late July and the first week of August at all locations. Frequent rains and high humidity during silking and grainfill of all hybrids across all locations resulted in favorable environmental conditions for natural Gibberella ear rot infection and DON accumulation.

Interpretation of the Rating Table

- Hybrid differences for DON were statistically highly different ($P < 0.0001$) within Table 4, Table 5 and across hybrids common to both Tables 4 and 5. The OCC decided to simplify the presentation of results by using a colour-coded or gray-scale rating for hybrids within OCC Table 4, OCC Table 5, and with those hybrids common across both Tables. The hybrids in the Rating Table were sorted based on their CHU rating.
- As expected, there were no hybrids resistant to DON accumulation (i.e., zero ppm). In the colour version of the Rating Table, zero ppm was illustrated as the dark green bar at the top of the hybrid listing, or the white in the gray-scale version of the Rating Table. In the colour version, hybrids were colour-coded from light green (lower than average DON) to yellow (average DON) to orange and red (higher than average DON) based on the average DON in hybrids in the Rating Table columns (Table 4, Table 5, or 30 hybrids common to Tables 4 and 5). Hybrids with no rating indicates that the hybrid was not tested at the locations represented in each column or Table.
- Some statistics of the DON concentrations within each Table are presented in the footnote of the Rating Table.
- A hybrid shaded with a different shading across columns in the Rating Table may simply indicate variability in hybrid across locations, samples and/or analysis.

Acknowledgements

- The OCC is grateful to Grain Farmers of Ontario (GFO) for their leadership, GFO and OMAFRA for the financial support to analyze the grain samples for DON, and to University of Guelph/OMAFRA research technicians for collecting the samples (Jonathan Brinkman, Ken VanRaay, Cheryl Van Herk, Brooke Jones and a very big thanks to Scott Jay for coming out of retirement to assist).

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OCC Hybrid DON Ratings ¹ 2018		Legend: Relatively low DON			Relatively high DON				
CHU	Hybrid	OCC Table 4 only ²	OCC Table 5 only ³	OCC Tables 4 and 5 combined ⁴	CHU	Hybrid	OCC Table 4 only ²	OCC Table 5 only ³	OCC Tables 4 and 5 combined ⁴
	Zero DON				3100	P0306AM			
2850	LS9495VT2PRIB				3100	E75K60LR			
2850	P9621AMXT				3100	CF611			
2850	P9608AMXT				3100	MZ4368SMX			
2850	NK95353220				3100	LR9903VT2PRIB			
2850	P9608AM				3100	PS3155GSXRIB			
2875	PS2818GSXRIB				3100	DS02J57RA			
2875	NK96593120				3100	DKC52-84RIB			
2875	3899VT2P/RIB				3125	CF626			
2900	LR9997VT2PRIB				3125	LR9503GENSSRIB			
2900	P9840AMXT				3125	P0414AM			
2900	DL4555				3125	P0574AMXT			
2900	NK97383010				3125	DKC53-56RIB			
2900	LR9697VT2PRIB				3125	B04R96SX			
2925	CF487				3150	DL6207			
2925	A6888G2RIB				3150	CF18501			
2925	CF474				3150	CF660			
2925	XP18099G2				3150	P0574AM			
2925	P9840AM				3150	4488SS/RIB			
2950	E69K50LR				3150	CF662			
2950	DS97B47RA				3150	P0506AM			
2950	3909SS/RIB				3175	CNX155143SD			
2950	A6757G8RIB				3175	A7373G2RIB			
2950	MZ3964DBR				3175	DKC54-45RIB			
2950	4079SS/RIB				3175	DKC55-05RIB			
2950	MZ3877SMX				3200	LR9608GENSSRIB			
2950	P9998AM				3200	MZ4623SMX			
2950	LR9999VT2PRIB				3200	B05N06PWE			
2950	MZ3818DBR				3200	MZ4676DBR			
2975	DL4902				3200	B08R85SX			
2975	DKC49-09RIB				3200	4791AS3111			
3000	HZ4010				3200	B06N36PWE			
3000	CF18402				3200	MZ467X			
3000	A7171G2RIB				3200	CF686			
3000	PS3035VT2PRIB				3250	P0825AM			
3000	E70G30LR				3250	A7790G8RIB			
3000	P0157AM				3275	DKC58-06RIB			
3000	LR9701GENSSRIB				3275	LR99A09VIP3220			
3000	P9998AMXT				3300	4997VT2P/RIB			
3025	HZ1040				3300	DL7250			
3025	HXE279Y				3300	MZ5134DBR			
3050	MZ4280DBR				3300	MZ5165DBR			
3050	MZ4158DBR				3300	CF758			
3050	HZ4255				3300	B10R42SX			
3050	DKC50-26RIB				3300	P0825AMXT			
3050	P0157AMXT				3300	P0977AM			
3050	4188SS/RIB				3300	DKC59-50RIB			
3050	CF610				3300	XP18108G2			
3050	B00R25PW				3350	CF762			
3050	B01R72SX				3350	CF18509			
3075	A7270G8RIB				3375	DKC63-60RIB			
3075	HXF211Y				3400	P1197AMXT			
3100	MZ4343DBR				3400	DL9812			
					3400	A8303G8RIB			

¹IMPORTANT: Hybrid ratings are of no guarantee for 2019. No hybrid is resistant.

²Ratings for OCC Table 4 = relative across hybrids at Belmont, Exeter and Ilderton (Hybrid range 1.9-21.3 ppm; average 7.1 ppm)

³Ratings for OCC Table 5 = relative across hybrids at Ridgetown and Tilbury (Hybrid range 1.7-8.3; average 4.3 ppm)

⁴Ratings OCC Tables 4 and 5 combined (average of 5 locations, if available) (Hybrid range 1.7-11.8; average 5.4 ppm)

OCC Hybrid DON Ratings ¹ 2018					Legend: Relatively low DON → Relatively high DON				
CHU	Hybrid	OCC Table 4 only ²	OCC Table 5 only ³	OCC Tables 4 and 5 combined ⁴	CHU	Hybrid	OCC Table 4 only ²	OCC Table 5 only ³	OCC Tables 4 and 5 combined ⁴
	Zero DON				3100	P0306AM			
2850	LS9495VT2PRIB		n/a	n/a	3100	E75K60LR		n/a	n/a
2850	P9621AMXT		n/a	n/a	3100	CF611		n/a	n/a
2850	P9608AMXT		n/a	n/a	3100	MZ4368SMX			
2850	NK95353220		n/a	n/a	3100	LR9903VT2PRIB			
2850	P9608AM		n/a	n/a	3100	PS3155GSXRIB		n/a	n/a
2875	PS2818GSXRIB		n/a	n/a	3100	DS02J57RA			
2875	NK96593120		n/a	n/a	3100	DKC52-84RIB		n/a	n/a
2875	3899VT2P/RIB		n/a	n/a	3125	CF626		n/a	n/a
2900	LR9997VT2PRIB		n/a	n/a	3125	LR9503GENSSRIB			
2900	P9840AMXT		n/a	n/a	3125	P0414AM			
2900	DL4555		n/a	n/a	3125	P0574AMXT			
2900	NK97383010		n/a	n/a	3125	DKC53-56RIB		n/a	n/a
2900	LR9697VT2PRIB		n/a	n/a	3125	B04R96SX			
2925	CF487		n/a	n/a	3150	DL6207			
2925	A6888G2RIB		n/a	n/a	3150	CF18501			
2925	CF474		n/a	n/a	3150	CF660		n/a	n/a
2925	XP18099G2		n/a	n/a	3150	P0574AM			
2925	P9840AM		n/a	n/a	3150	4488SS/RIB	n/a		n/a
2950	E69K50LR		n/a	n/a	3150	CF662		n/a	n/a
2950	DS97B47RA				3150	P0506AM			
2950	3909SS/RIB		n/a	n/a	3175	CNX155143SD			
2950	A6757G8RIB		n/a	n/a	3175	A7373G2RIB			
2950	MZ3964DBR		n/a	n/a	3175	DKC54-45RIB			
2950	4079SS/RIB				3175	DKC55-05RIB			
2950	MZ3877SMX		n/a	n/a	3200	LR9608GENSSRIB			
2950	P9998AM		n/a	n/a	3200	MZ4623SMX			
2950	LR9999VT2PRIB		n/a	n/a	3200	B05N06PWE	n/a		n/a
2950	MZ3818DBR		n/a	n/a	3200	MZ4676DBR			
2975	DL4902		n/a	n/a	3200	B08R85SX	n/a		n/a
2975	DKC49-09RIB		n/a	n/a	3200	4791AS3111	n/a		n/a
3000	HZ4010		n/a	n/a	3200	B06N36PWE	n/a		n/a
3000	CF18402		n/a	n/a	3200	MZ467X	n/a		n/a
3000	A7171G2RIB		n/a	n/a	3200	CF686	n/a		n/a
3000	PS3035VT2PRIB		n/a	n/a	3250	P0825AM	n/a		n/a
3000	E70G30LR		n/a	n/a	3250	A7790G8RIB	n/a		n/a
3000	P0157AM				3275	DKC58-06RIB			
3000	LR9701GENSSRIB				3275	LR99A09VIP3220			
3000	P9998AMXT		n/a	n/a	3300	4997VT2P/RIB	n/a		n/a
3025	HZ1040		n/a	n/a	3300	DL7250	n/a		n/a
3025	HXE279Y		n/a	n/a	3300	MZ5134DBR	n/a		n/a
3050	MZ4280DBR		n/a	n/a	3300	MZ5165DBR	n/a		n/a
3050	MZ4158DBR		n/a	n/a	3300	CF758	n/a		n/a
3050	HZ4255		n/a	n/a	3300	B10R42SX	n/a		n/a
3050	DKC50-26RIB		n/a	n/a	3300	P0825AMXT	n/a		n/a
3050	P0157AMXT				3300	P0977AM	n/a		n/a
3050	4188SS/RIB				3300	DKC59-50RIB			
3050	CF610		n/a	n/a	3300	XP18108G2	n/a		n/a
3050	BOOR25PW		n/a	n/a	3350	CF762	n/a		n/a
3050	B01R72SX				3350	CF18509	n/a		n/a
3075	A7270G8RIB		n/a	n/a	3375	DKC63-60RIB	n/a		n/a
3075	HXF211Y		n/a	n/a	3400	P1197AMXT	n/a		n/a
3100	MZ4343DBR				3400	DL9812	n/a		n/a
					3400	A8303G8RIB	n/a		n/a

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