Corn and wheat viruses in Ohio

Soft Wheat Quality Research Review Conference Lucy R. Stewart, Ph.D.. 03-20-2013

Impact of corn & wheat viruses in Ohio

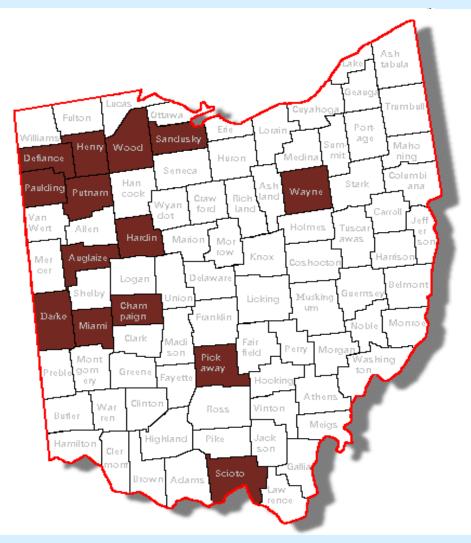
CORN

- maize dwarf mosaic virus (MDMV) and maize chlorotic dwarf virus (MCDV) have been the most common viruses in OH
- Yield losses due to viruses were devastating in 1960s-1970s, control measures implemented

WHEAT

- Sporadic disease problems, dependent on weather and vector populations
- Many wheat viruses, few control measures: luteoviruses, wheat streak mosaic virus, soil-borne wheat mosaic virus, wheat spindle streak mosaic virus

Part I: Ohio wheat virus survey



•Ohio is the top U.S. producer of soft red winter wheat used for cakes, cookies, and crackers.

•Ohio Small Grains Marketing Program funded survey with co-PIs Pierce Paul and Feng Qu (OSU)

Experimental design:

Collected samples from each of 27 field locations in 14 Ohio counties, 2 fields/county except Wayne.

At each field, collected 4 samples: 2 wheat samples as symptomatic as possible

1 asymptomatic wheat sample 1 pool from adjacent non-wheat weedy grasses

Field selection: good, bad & ugly



Of 27 field sites, three were volunteer fields and two were adjacent planted/volunteer fields

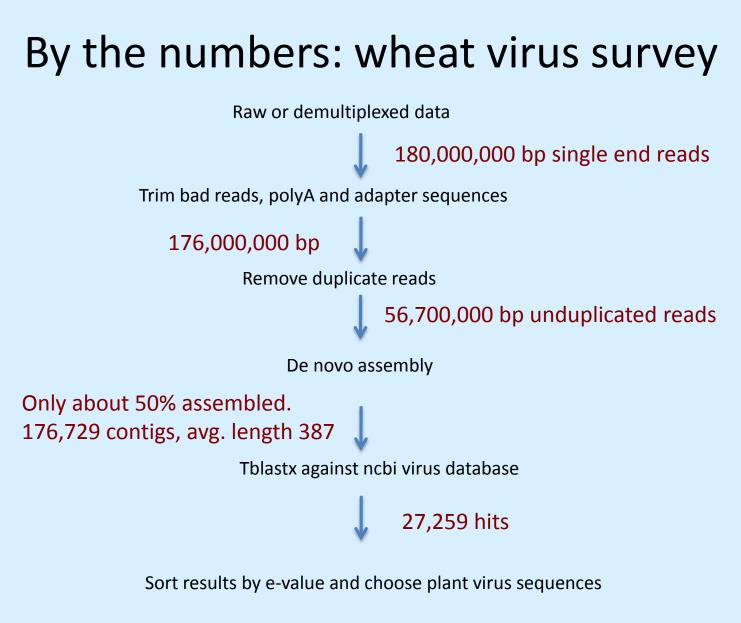


Virus-like symptoms



More potential virus symptoms





175 plant virus hit contigs, hit length \geq 150

Wheat virus survey results: virus query

	of hits	Lowest Accession E-value (E-value)	Description (E-value)	%	Accession (identity %)	Description (identity %)		Accession (positive %)	Description (positive %)	Greatest / hit (length I
contig 585	2874		Soil-borne wheat mosaic virus (SBWMV) complete RNA 1 sec		L07937	Soil-borne wheat mosaic virus (SBWM		L07937	Soil-borne whea	
contig 239	4 3424 4506		Oat necrotic mottle virus isolate Type-NE, complete genome Ryegrass mosaic virus strain RGMV-AV, complete genome		AY377938 AF035818	Oat necrotic mottle virus isolate Type- Ryegrass mosaic virus strain RGMV-A		AY377938 AF035818	Oat necrotic mo	
contig 50 contig 142			Beet soil-borne virus clone pBSBV-cp061023-1 from Mongolia		L07938	Soil-borne wheat mosaic virus (SBWM		L07938	Ryegrass mosai Soil-borne whea	
contig 432		0 X73883	Wheat spindle streak mosaic virus RNA		X73883	Wheat spindle streak mosaic virus RN		X73883	Wheat spindle s	
contig 248 contig 164	2468 1264	0 DQ530423 0 AB183263	Brome mosaic virus strain Fescue segment RNA1, complete : Brome mosaic virus RNA2, complete sequence	100	DQ530423	Brome mosaic virus strain Fescue seg Brome mosaic virus RNA2, complete s			Brome mosaic v Brome mosaic v	2706 [
					AB183263					A construction of the second sec
contig 476	3 2495		Cereal yellow dwarf virus - RPV isolate 005RPV, complete ge		AF235168 EF521839	Cereal yellow dwarf virus-RPS RPV M		EF521848	Cereal yellow dy	
contig 476 contig 720	2 2619 5 462		Cereal yellow dwarf virus-RPS RPV Mex-1, complete genome Blueberry latent virus isolate AR, complete genome		HQ128706	Cereal yellow dwarf virus - RPV isolate Rhododendron virus A isolate GSMNP		AF235168 HQ128706	Cereal yellow dw Rhododendron y	
contig 131		0 HM029248	Blueberry latent virus isolate AR, complete genome	*	HM756714	Blueberry latent virus isolate NJ-4 fusio		HQ128706	Rhododendron v	
contig 132	5 91	2E-134 JQ045336	Raphanus sativas chrysovirus 1 segment RNA2 putative coat		HM004068	Verticillium dahliae chrysovirus 1 segm		FN178513	Aspergillus fumi	
contig 199	2485		Cotton leafroll dwarf virus isolate ARG, complete sequence		HM439608	Pepper yellow leaf curl virus isolate Is,		EF521839	Cereal yellow dv	
contig 3823	3: 888	0 FJ361769	Wheat yellow mosaic virus isolate Zhumadian segment RNA2		AB430766	Barley yellow mosaic virus genomic R		AB430766	Barley yellow me	
contig 257			Wheat streak mosaic virus isolate H98, complete genome Tomato spotted wilt virus isolate TSWV-YN segment S, complete		AF511615 AB012756	Wheat streak mosaic virus isolate H98		AF511615 AB012756	Wheat streak me Sclerophthora m	
contig 786 contig 868			Basella rugose mosaic virus isolate BR, complete genome		FJ348359	Sclerophthora macrospora virus B gen Wheat streak mosaic virus isolate Arg2		EU914917	Wheat streak m	
contig 254	7 833		Barley yellow dwarf virus - PAV isolate 0109, complete genom		EF521828	Barley yellow dwarf virus - PAV isolate		EF521828	Barley yellow dv	
contig 320	7 506	-1 JQ284451	Tomato spotted wilt virus isolate DSMZ PV-0182 RNA-depend	77	AB697826	Fig mosaic virus RdRp gene for RNA-c	92	AB697826	Fig mosaic virus	834
contig 867			Mammalian orthoreovirus 2 clone T2/human/Netherlands/1/84		AF285169	Wheat streak mosaic virus type strain of		AF285169	Wheat streak me	
contig 130	8 368		Ambrosia asymptomatic virus 2 UKM-2007 isolate 05TGP003		Y12433	Pineapple bacilliform virus DNA for RT		EF710632	Cotesia sesamia	
contig 155	8 937	0 AF035642	Ryegrass mosaic virus strain RGMV-D polyprotein gene, parti	100	Y09854	Ryegrass mosaic virus, complete genc	100	AF035642	Ryegrass mosai	804 /
contig 148	7 75	2E-105 JQ045337	Raphanus sativas chrysovirus 1 segment RNA3 putative prote	73	JQ045337	Raphanus sativas chrysovirus 1 segme	86	FN178515	Aspergillus fumi	c 795
contig 664	114	8E-106 FR823299	Raspberry leaf blotch virus segment RNA1, complete genome	89	AB697836	Fig mosaic virus RdRp gene for RNA-	100	AB697836	Fig mosaic virus	732
contig 4350	0 255	2E-169 EF521827	Cereal yellow dwarf virus - RPV isolate 005RPV, complete ge		EF521827	Cereal yellow dwarf virus - RPV isolate		EF521827	Cereal yellow dv	
contig 260		6E-152 FJ348358	Wheat streak mosaic virus isolate WA94 polyprotein gene, co		FJ348358	Wheat streak mosaic virus isolate WAS		FJ348358	Wheat streak me	
contig 476 contig 1157		3E-147 AF235168 0 AF235168	Cereal yellow dwarf virus-RPS RPV Mex-1, complete genome Cereal yellow dwarf virus-RPS RPV Mex-1, complete genome		AF235168 FM865413	Cereal yellow dwarf virus-RPS RPV M Wheat yellow dwarf virus-GPV, complete		AF235168 FM865413	Cereal yellow dw Wheat yellow dw	
contig 1698		6E-132 AF235168	Cereal yellow dwarf virus-RPS RPV Mex-1, complete genome		AF235168	Cereal yellow dwarf virus-RPS RPV M		AF235168	Cereal yellow dv	
contig 213	6 546	7E-143 EF521848	Cereal yellow dwarf virus - RPV isolate 092, complete genom		EF521848	Cereal yellow dwarf virus - RPV isolate		EF521848	Cereal yellow dy	۸ 591 I
contig 293	1744	0 FM865413	Wheat yellow dwarf virus-GPV, complete genome, genomic R		DQ988088	Cereal yellow dwarf virus - RPV isolate		Y07496	Potato leaf roll v	
contig 958		6E-123 DQ988103	Cereal yellow dwarf virus - RPV isolate RPV01P4o04 replicas		HM804472	Beet western yellows virus strain BJ ge			Beet western ye	576 [
contig 901		2E-157 AE004092 9E-88 EF710639	Streptococcus pyogenes M1 GAS, complete genome Cotesia sesamiae Mombasa bracovirus clone BAC 4B19, con		AB003142 EU155195	Arabidopsis thaliana transgenic line C Cauliflower mosaic virus isolate PD-Vi		AB003142 EF472246	Arabidopsis that RD114 retrovirus	
contig 441 contig 200		2E-122 EU914917	Wheat streak mosaic virus isolate Naghadeh, complete genor		EU914917	Wheat streak mosaic virus isolate Nag		EU914917	Wheat streak m	
contig 248	9 238	7E-126 EU914918	Wheat streak mosaic virus isolate Saadat-Shahr, complete get		AF511614	Wheat streak mosaic virus isolate H95		EU914918	Wheat streak me	
contig 191	16 87	-1 HQ317867	Chilli veinal mottle virus isolate Pp3 CP gene, partial cds	75	JX074053	Human rhinovirus B strain HRV-B92_p	83	JX074053	Human rhinoviru	J 546 /
contig 1800	0(166		Grapevine leafroll-associated virus 2 isolate PG11 heat shock		JN698995	Mycobacterium phage Dori, complete g		AY211507	Human polioviru	
contig 9549	9 1107	2E-113 EF521827	Cereal yellow dwarf virus - RPV isolate 005RPV, complete ge		EF521827	Cereal yellow dwarf virus - RPV isolate		EF521827	Cereal yellow dy	
contig 292 contig 1479	953	3E-115 EF521830 3E-95 U29604	Cereal yellow dwarf virus - RPV isolate 010, complete genom Barley yellow dwarf virus - PAV PAV-129 coat protein and OR		EF521830 U29604	Cereal yellow dwarf virus - RPV isolate Barley yellow dwarf virus - PAV PAV-12		EF521830 U29604	Cereal yellow dy Barley yellow dy	
contig 125	3 71	-1 HE819368	European mountain ash ringspot-associated virus partial viral	67	AF369029	White spot syndrome virus, complete of	83	GU735272	Uncultured virus	492
contig 2824		7E-107 DQ118372	Barley yellow dwarf virus-PAV coat protein and putative move		DQ118372	Barley yellow dwarf virus-PAV coat pro			Barley yellow dv	
contig 867			Cotesia sesamiae Mombasa bracovirus clone BAC 4B19, con		EU708316	Citrus yellow mosaic virus isolate SOP		EU362853	Ambrosia asymp	
contig 253	3 153	-1 AJ002234 4E-164 AF235168	Banana streak OL virus coding regions Cereal yellow dwarf virus-RPS RPV Mex-1, complete genome	56	HM849038	Soybean cyst nematode midway virus		HM849038	Soybean cyst ne	
contig 165 contig 153		4E-164 AF235168 5E-34 EF710632	Coreal yellow dwarf virus-RPS RPV Mex-1, complete genome Cotesia sesamiae Kitale bracovirus clone BAC 9L12, complete		AF235168 JF301669	Cereal yellow dwarf virus-RPS RPV M Grapevine vein-clearing virus isolate L		EF521839 AJ277091	Cereal yellow dw Sugarcane bacil	
contig 1204			Cereal yellow dwarf virus - RPV isolate 092, complete genom		EF521848	Cereal yellow dwarf virus - RPV isolate		EF521848	Cereal yellow dy	
contig 106	0 318	-1 HQ543126	Turnip yellows virus isolate 19pP0 P0 protein gene, partial cd	73	FM865413	Wheat yellow dwarf virus-GPV, comple		FM865413	Wheat yellow dv	۸ 444 <i>i</i>
contig 189		2E-91 EF521848	Cereal yellow dwarf virus - RPV isolate 092, complete genom		EF521848	Cereal yellow dwarf virus - RPV isolate		EF521848	Cereal yellow dv	<i>r</i> 414 (
contig 720	1 280		Wheat streak mosaic virus isolate WA94 polyprotein gene, co	r 99	FJ348358	Wheat streak mosaic virus isolate WAS		FJ348358	Wheat streak me	
contia 150	1/1	_1 EE710630	Cotasia sasamiaa Kitala bracovirus clone BAC 4C14. compla	r 60	00355074	Caneicum chloroeie virue ieolate CaCV	98	DO174103	Atlantic salmon	408:1

RT-PCR confirmation

RT	A B C D	E F G H	I J K L WGWGWGWG	M N O P	Q R S T WGWGWGWG	U V W X	Y Z Woo	+ctrl		_
Luteo Gen.	+	+	+	+	+	+	+	N/A		
R								-		
BYDV GAV	+	+	-	-?		-?		N/A		
т	- + - +	- + +								Primers were
BYDV GPV	+	+	+	-	-	-(+ weak)	-	N/A		
BYDV	+	+ - + +	+ + -							designed in
MAV D&A	+	+	+	+	+	*	+	+		house or used
	+ - + - + - + -	+	+ + - + -	+	- +	+ + +	+			from:
BYDV PAS LS	+	-	-	-	+	-	+	N/A		
BYDV PAV	+	+	•	•	+ - - 0 - - + -	+	+	+		Deb and
D&A	+ + + + - + - + + +		+ + + + + + -	-	+ + - 0	+ + + +	+ - + + -	+		Anderson
BYDV PAV	+	+	+	+	+ +	+	+	+		(2008) J of Virol
т										Methods
BYDV RMV D&A	+	-?	+	+	+	-?	-	+	ooor primers	148:17-24,
	+? - +?		- ? ? - ?	? - +?	0 + + ? -					140.17-24,
BYDV SGV D&A	+	+	+	+	+	+	+	+		
	+ - + + + - + -	+ - + +	+ + - + -	+	+ + - 0	+ + + + - +	+ - +			Robertson et al
										(1001) Con
CYDV RPV	+	+	+	+	+	+	+	+	repeated.	(1991) J Gen
CYDV RPV D&A	+	+	+	+	+	+		+	repeated. t ideal primers	Virol 72.1/173-
			+							Virol 72.1/173-
D&A			+				+ +	-		Virol 72:1473-
		 	+	* * * *			+ + +			Virol 72:1473- 1477,
D&A BSMV T		 	+	* * * *			+ + +?	-		Virol 72:1473- 1477, and Tao et al.
D&A BSMV		 + + +	+	* * * *			+ + +? 	N/A		Virol 72:1473- 1477, and Tao et al. (2012) Arch
D&A BSMV T HPV NP LS		 + + +	+ 	* * * *		 	+ + +? 	- N/A +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T		 + + +	+ 	* * * *		 	+ + +? -	- N/A + +		Virol 72:1473- 1477, and Tao et al. (2012) Arch
D&A BSMV T HPV NP LS RGMV LS SBWMV		 + + +	+ 	+ + + + + + -	+ + + 	 	+ + +? - 	- N/A + +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS RGMV LS		 + + +	+ 	+ + + + + + -		 	+ + +? - 	- + + N/A		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS RGMV LS SBWMV		 + + +	+ 	+ + + + + + -		 	+ + +? - 	- N/A + N/A		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS RGMV LS SBWMV D&A SCMV LS				+ + + + + + -		 	+ + +? - 	- + + N/A +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS RGMV LS SBWMV D&A				+ + + + + + -		 	+ + +? - 	- + + N/A + +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS SBWMV D&A SCMV LS WSMV D&A				+ + + + + + -			+ + + +? -	- + + N/A + +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS RGMV LS SBWMV D&A SCMV LS WSMV				+ + + + + + -			+ + +? - - - - - - - - 	- N/A + + N/A + + + + + + + + + +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS SBWMV D&A SCMV LS WSMV D&A WSMV D&A				+ + + + + + -			+ + +? - - - - - - - - 	- N/A + + N/A + + + + + +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-
D&A BSMV T HPV NP LS SBWMV D&A SCMV LS WSMV D&A WSMV D&A				• - - + + + - - • - - - - - - - - • - <th></th> <th></th> <th> + + + </th> <th>- N/A + + N/A + + + + + + + + + +</th> <th></th> <th>Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-</th>			+ + + 	- N/A + + N/A + + + + + + + + + +		Virol 72:1473- 1477, and Tao et al. (2012) Arch Virol 157:1261-

Results summary

VIRUS sequence match (tblastx)	# of contigs	Avg. hit length (nt)	Transmission	Confirmed in wheat (RT-PCR)	Locations
Barley stripe mosaic virus (BSMV)	0	N/A	Seed	untested	B(weeds), G (weeds), O (weeds)
Barley yellow dwarf virus (BYDV; all strains)	33	318	Aphids	Yes	All
Brome mosaic virus (BMV)	5	1225	Unknown	Untested ^b	Untested
Cereal yellow dwarf virus (CYSDV; all strains)	25	593	Aphids	Yes	All
Oat necrotic mottle virus Type-NE	1	5328	Unknown	Untested ^a	Untested
Ryegrass mosaic virus (RGMV-AV)	4	1460	Eriophyid mite	Yes	C (weeds), D, N (weeds), S
Soil-borne wheat mosaic virus (SBWMV)	2	4642	Soil protozoan Polymyxa graminis	Yes	R, T
Sugarcane mosaic virus (SCMV)	2	243	Aphids	No	None
Wheat mosaic virus (WMoV; emaravirus) ^c	5	499	Eriophyid mite	Yes	Н, К, W
Wheat streak mosaic virus (WSMV)	23	403	Eriophyid mite	Yes	Е, К
Wheat yellow dwarf virus (WYDV)	2	250	Aphids	Untested	Untested

^bWheat is reported to be immune to this virus <u>http://www.dpvweb.net</u>.

^cIncludes all related virus (emaravirus) sequences since complete genome of High Plains virus is not yet reported.



Agent of High Plains disease in Ohio



Transmitted to sweet corn in the lab

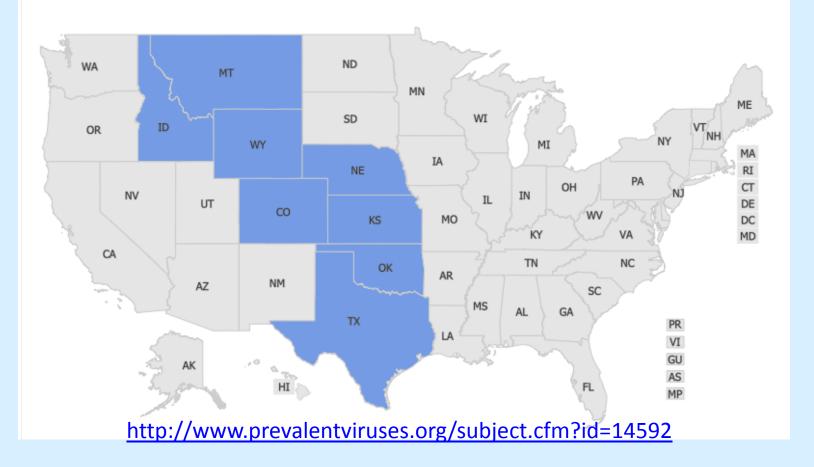
Miami, Auglaize, and Paulding county samples positive. Paulding and part of Auglaize plots were volunteer wheat.

Wheat mosaic virus (High Plains virus)

High Plains Virus (HPV)

Taxonomic Rank: Viruses: Unassigned Viruses: Unassigned Viruses: Unassigned viruses: Uncharacterised virus NAPIS Code: FVHPVAA

Distribution

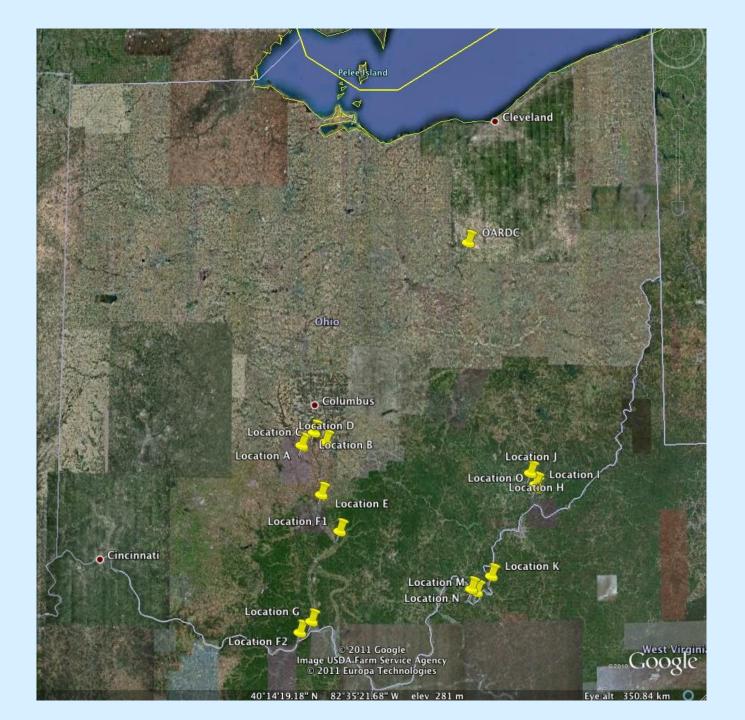


Part II: Ohio corn viruses, MDMV and MCDV

Project goals:

 Determine whether MCDV and MDMV are still found in Johnsongrass, sweet corn, and field corn

• Collect materials that can be used to assess the sequence diversity of viruses.

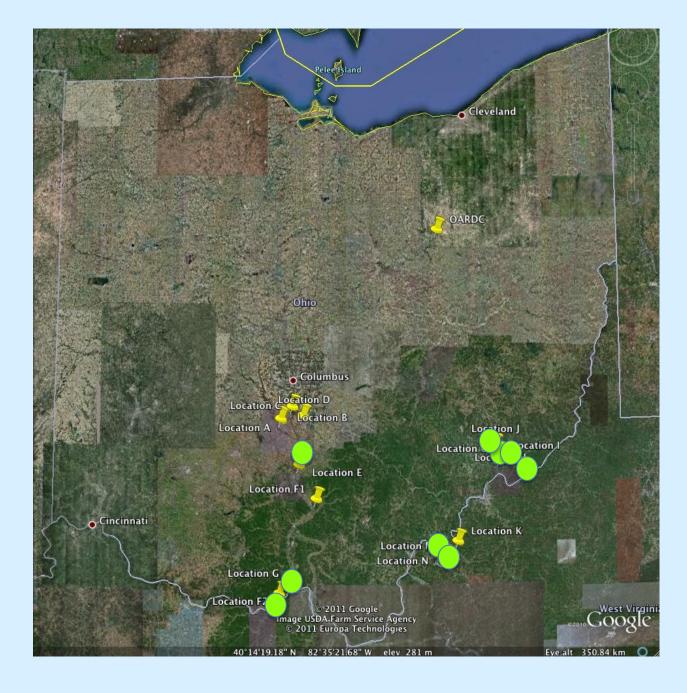


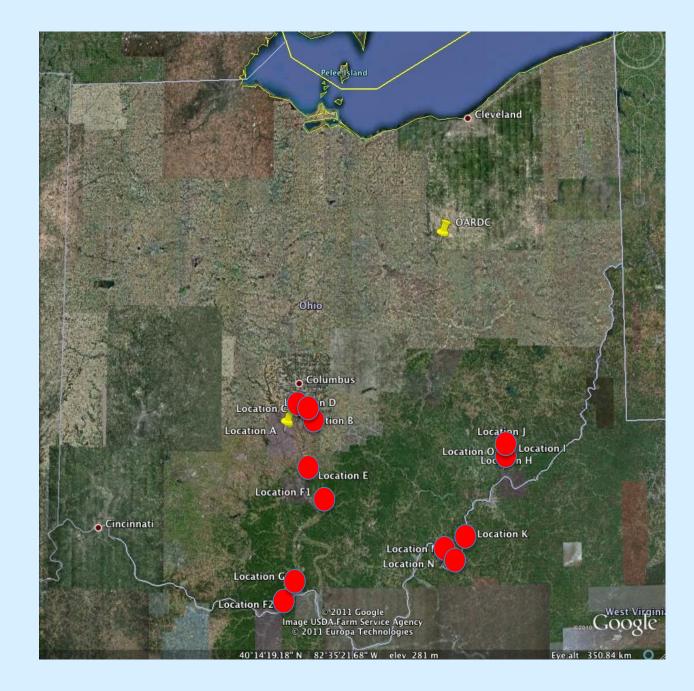
Virus Symptoms Sweet corn in Ashville





MCDV distribution





MDMV distribution

	Site	Near	MCDV	MDMV- A	Sweet corn	Field corn	Johnsongrass
	А	Darbyville	0/2	0/2	0	1	1
2011	В	Darbyville	0/6	2/6	0	1	5 (2 infected MDMV)
ELISA	С	Darbyville	0/8	5/8	0	2	6 (5 infected MDMV)
results	D	Ashville	0/10	8/10	2 (both MDMV)	0	8 (6 infected MDMV)
	E	207x23	1/4	2/4	0	0	4 (none co-infected)
	F1	Chillicothe	0/3	1/3	0	1	2
	F2	Friendship	9/11	5/11	0	1	11 (5 MCDV only, 2 MDMV only, 4 co-infected)
	G	Friendship	2/13	4/13	5 (2 MDMV)	0	8 (2 MCDV only, 2 MDMV only)
	н	Marietta	0/10	9/10	7 (6 MDMV)	0	3 (all MDMV)
	I	Marietta	1/10	10/10	3 (all MDMV)	0	7 (6 MDMV only, 1 co-infected)
	J	Lowell	0/2	0/2	0	3	0
	К	Portland	0/10	5/10	7 (2 MDMV)	0	5 (3 MDMV)
	L	unknown	1/2	1/2	0	0	2 (none co-infected)
	М	Letart Falls	1/10	2/10	4	0	6 (1 MDMV only, 1 co-infected)
	Ν	Letart Falls	1/4	1/4	0	0	4 (none co-infected)
	0	Racine	4/4	2/4	0	0	4 (all MCDV, 2 co-infected)
	Ρ	Marietta	4/8	8/8	0	2 (2 MDMV)	6 (all MDMV, 4 co-infected)
		TOTAL:	24/118	60/118	30	12	86

2012 ELISA results

Insects trapped (A. = Aphids ; G. = Graminella) and ELISA data for *MDMV-A, MCDV, SCMV, P. stewartii* in Sweet corn, Johnsongrass and field corn samples (2012)

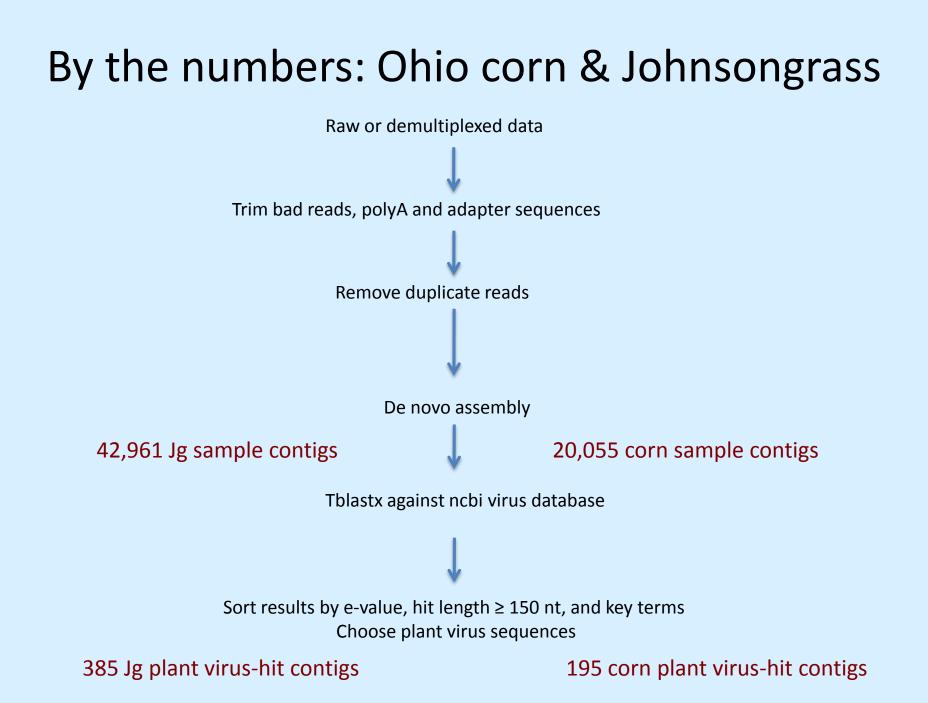
*No field found

Table 2: Insects trapped (A. = Aphids; G. = Graminella) and ELISA data for MDMV-A, MCDV, SCMV, P. stewartii in Sweet corn, Johnsongrass and field corn samples (2012)

*No field found

#	Near	I	sects pped		Johnso	n Grass			Swee	t corn			Fie	ld corn		Total samples
			ppeu	MDMV-A	MCDV	SCMV	P.stewartii	MDMV-A	MCDV	SCVM	P. stewartii	MDMV-A	MCDV	SCMV	P. stewartii	per
		Α	G													location
AA	Darbyville	-	-	0/1	0/1	1/1	0/1			*						1
BB	Ashville	-	-	0/1	0/1	0/1	1/1	0/3	0/3	0/3	0/3					4
CC	Ashville	-	+	2/2	1/2	1/2	0/2	3/3	0/3	1/3	0/3					5
DD	Waterly	-	-	1/1	1/1	0/1				*						1
EE	Waterly	-	+	1/1	1/1	0/1	0/1	2/3	0/3	0/3	0/3					4
FF	Friendship	-	+	5/8	0/8	0/8	0/8			*	1					8
GG	Friendship	+	-	No syn	nptoms fo	und		4/9	0/9	0/9	0/9					9
HH	Wheelersburg	+	+	3/5	2/5	0/5	0/5	4/5	1/5	0/5	0/5					10
П	Wheelersburg	+	-	1/1	1/1	0/1	0/1	7/7	0/7	0/7	0/7					8
JJ	Marietta	+	-	3/3	1/3	0/3	0/3	8/8	0/8	0/8	0/8					11
КК	Marietta	-	+	1/2	0/2	0/2	0/2	9/9	0/9	0/9	0/9					11
LL	Coal Run	-	-	0/2	0/2	0/2	0/2			*	1	3/6	0/6	0/6	0/6	8
MM	Portland	-	+	2/3	0/3	0/3	0/3	6/7	0/7	0/7	0/7				1	10
NN	Letart Falls	-	+	1/3	1/3	2/3	0/3	0/2	0/2	0/2	0/2					5
Т	otal infected sar	nple	S	12/ 33	8/33	1/ 33	1/ 33	42/56	1/56	1/56	0/56	3/6	0/6	0/6	0/6	95

Table by R. Teplier, ,2012



RNA-Seq Johnsongrass samples

37 MDMV-hit contigs6 MCDV-hit contigs

Sumber of hit Lowest Evaluit Accession (E-value) 424 121016 1 two Johnson grass_GTCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 166 930 0 AV3629112 Maize chlorotic dwarf virus Isolate M1, complete genome 3138 121016 1 two Johnson grass_GTCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 18 841 0 AV362515 Maize dwarf mosaic virus polyprotein, isolate MV0801, genomic R1 1291 1 two Johnson grass_GTCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 10 1217 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate MV0801, genomic R1 1521 1 two Johnson grass_GTCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 2368 283 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate MV0801, genomic R1 1911 121016_1 two Johnson grass_GTCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 2368 283 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate M1, complete genome 1080 121016_1 two Johnson grass_GTCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 2368 274 -1 JX513891 Grapevine leafroli-associated virus 2 isolate GLV2 1050-02 polyprotein, isolate M1, complete genome 1080 121016_1 two Johnson grass_GTCG	100 / A 100 f A 100 f tein (OR 100 f 100 / 100 f A 100 f cds 99 f
3171 121016 1 wo Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 187 841 0 AY36251 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic R 3138 121016 1 wo Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 187 841 0 AY36251 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic R 1521 121016 1 wo Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 10 127 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic R 1491 121016 1 wo Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 236 283 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic R 1911 121016 1 wo Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 236 283 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic R 1005 121016 1 wo Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 236 274 -1 JX513891 Grapevine leafol-associated virus 2 isolate GLV2 1050-02 polyprotein, isolate Mv180 1005 121016 1 wo_	A 99 f 100 / A 100 f A 100 f tein (OR 100 f 100 / A 100 f Cds 99 f 100
3138 121016 1.two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 10 1217 0 AY362511 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RI 1797 122016.1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 81 964 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RI 1491 122016.1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 287 274 -1 AY362514 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RI 1991 12016.1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 287 274 -1 JX318191 Grapevine leafned Virus 2 isolate KV0801, genomic RI 1000 12016.1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 287 0 AY362512 Maize dwarf mosaic virus isolate KI1, conjeteg enome 1001 12016.1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 287 0 AY362312 Maize dwarf mosaic virus isolate KIV0801, genomic RI 1001 12016.1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 43	100 / A 100 f A 100 f B2 f 100 f 100 f 100 f A 100 f Cds 99 f 100 f 100 f
1521 12111 12111 1211 1211	A 100 H 82 H tein (OR 100 H 100 H A 100 H cds 99 (-like prd 92 J
1491 121016 1 wo Johnson grass GTCGC L032 R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 287 283 0 PA61349 Raphanus sativus cryptic virus 3 segment 1, complete sequence 1191 121016 1 wo Johnson grass GTCGC L003 R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 287 274 -1 JX518291 Grapevine leafoll-associated virus 2 isolate GIV2 1050-02 polypn 1080 121016 1 two Johnson grass GTCGC L003 R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 859 152 0 JX182911 Maize chiorotic dwarf virus isolate M1, complete genome 906 121016 1 two Johnson grass GTCGC L003 R1 (paired) trimmed (paired) - without duplicates contig 43 1028 0 JX1853164 Maize dwarf mosaic virus isolate M308, genomic R1 9121016 1 two Johnson grass GTCGC L003 R1 (paired) trimmed (paired) - without duplicates contig 43 1028 0 DQ973103 Maize dwarf mosaic virus isolate M308, genomic R1 72121016 1 two Johnson grass GTCGC L003 R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 131 823 0 DQ973103 Maize dwa	82 f tein (OR 100 k 100 f A 100 f cds 99 f -like prd 92 J
1191 121016 1 wo Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 287 274 -1 JX\$13891 Grapevine leafnoll-associated virus 2 isolate GLV2 1050-02 polypor 1000 122016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 889 152 0 AY829120 Maize dwarf mosaic virus isolate M1, complete genome 1005 122016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 56 497 0 XY829120 Maize dwarf mosaic virus polyprotein, isolate M1, complete genome 966 122016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 131 1028 0 FM883146 Maize dwarf mosaic virus polyprotein, isolate MV80801, genomic R1 780 122016 1 two Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 131 823 0 JQ280313 Maize dwarf mosaic virus isolate M1, complete genome 721 122016.1 1 two Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 553 311 -1 EU84430 Carnation necrotic fleck virus isolate M1, complete genome 721 122016.1 two Johnson	tein (OR 100) 100 / 100 / A 100 f cds 99 f 100 ł -like prc 92 J
1080 121016 1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 55 152 0 AY829120 Maize dvarf mosaic virus looitet R1, complete genome 1080 121016 1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 55 497 0 XY83120 Maize dvarf mosaic virus looitet R1ay, complete genome 966 121016 1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 13 1028 0 FM883164 Maize dvarf mosaic virus looitet R1ay, complete genome 781 121016 1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 131 823 0 DQ973031 Maize dvarf mosaic virus looite Genome, complete genome 732 121016. 1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 131 823 0 DQ973031 Maize dvarf mosaic virus looite Genome, complete genome 732 121016. 1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 553 311 -1 EU884444 Carnation necrotic fleck virus looitet R1ay, complete genome 666 121016. 1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 52 7.06E-149 HE573846 Maize dvarf mosaic virus looitet R1ay, complete genome 696 121016.1 two Johnson grass_GTCCGC_L003. R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) trim	100 / 100 f A 100 f cds 99 (100 f -like prd 92 J
1005 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 56 497 0 JX185302 Maize dwarf mosaic virus isolate Taly, complete genome 966 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 43 1028 0 FM883164 Maize dwarf mosaic virus isolate Mos01, genomic R1 813 12016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 131 823 0 JQ280314 Maize dwarf mosaic virus isolate Gestan, complete genome 732 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 953 311 -1 EU84043 Carnation necrotic fleck virus isolate Gestan, complete genome 732 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 953 311 -1 EU8443 Carnation necrotic fleck virus isolate Gestan, complete genome 696 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 57 804 0 JX185302 Maize dwarf mosaic virus isolate Carnation necrotic fleck virus isolate Taly, complete genome 696 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 52 804 7.06E-149 HES73846 Maize dwarf mosaic virus solate T	100 F A 100 F cds 99 t 100 F -like prd 92 J
966 121016 1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 43 1028 0 FM883164 Maize dwarf mosaic virus polyprotein, isolate Mv801, genomic R 813 121016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 18 738 0 DQ9280313 Maize dwarf mosaic virus isolate Golestan, complete genome 732 121016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Golestan, complete genome 732 121016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 311 -1 EU884443 Carnation necrotic fleck virus isolate Tunned (paired) -1 without duplicates contig 953 -7 .006CG_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 1028 117 -1 Z37846 Sugarcane mosaic virus isolate AGe-1662, complete genome 594 121016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 1120 163 -1 AJ31608 Scallon mosaic virus, complete genome 585 122016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 531 355 -1 .35E-123 HE57382 Maiz	A 100 F cds 99 t 100 F -like pro 92 J
 813 121016 1 wo Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 18 738 0 DQ973169 Maize dwarf mosaic virus from Argentina polyprotein gene, partial 780 121016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 131 738 0 DQ973169 Maize dwarf mosaic virus from Argentina polyprotein gene, partial 780 121016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 953 720 121016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 953 720 121016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 953 706E-149 HE573864 Maize dwarf mosaic virus isolate II, paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1028 7.0EE-149 HE573864 Maize dwarf mosaic virus isolate RG-1662, complete genome 696 121016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1028 7.0EE-149 HE573864 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper o 699 121016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1102 117 - 1 JA316084 Scallion mosaic virus partial gene for polyprotein, P1-helper o 585 121016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 325 1516 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 512 1016 1 two Johnson grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 325<td>cds 99 (100 ł -like pro 92 J</td>	cds 99 (100 ł -like pro 92 J
780 121016 1 two_Johnson_grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 131 823 0 JQ280313 Maize dwarf mosaic virus isolate Golestan, complete genome 722 121016 1 two_Johnson_grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 953 311 -1 EU884433 Canation necrotic fleck virus isolate Golestan, complete genome 666 121016 1 two_Johnson_grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 57 804 0 0 X8302 Maize dwarf mosaic virus isolate Taly, complete genome 669 121016 1 two_Johnson_grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 52 351 7.06E-149 HE573846 Maize dwarf mosaic virus isolate R4G-1662, complete genome 699 121016 1 two_Johnson_grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 1002 8117 -1 X37866 Sugarcan mosaic virus, complete genome 594 121016 1 two_Johnson_grass_GTCCGC_L03 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 1120 163 -1 AJ316084 Scallion mosaic virus, complete genome 585 121016 1 two_Johnson_grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 133 25 1.35E-123 HE573827 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 595 121016 1 two_Johnson_grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 135 325 1.35E-123 HE573827 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 595 121016 1 two_Johnson_grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 135 325 1.35E-123 HE573827 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 595 121016 1 two_Johnson_grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 135 325 1.35E-123 HE573827 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 595 12106 1 two_Johnson_grass_GTCCGC_L003 R1 (paired) trimm	-like pro 92 J
722 121016 1. two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 953 311 -1. EU884424 Carnation necrotic fleck virus isolate Yunnan heat shock protein 7 720 121016 1. two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 957 804 0. X1845302 Maize dwarf mosaic virus isolate Taly, complete genome 696 1221016_1 1. two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1028 311 -1. EU884424 Carnation necrotic fleck virus isolate Taly, complete genome 696 1221016_1 1. two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1028 117 -1. 122384262 Sugaram mosaic virus isolate ARG-1662, complete genome 594 1221016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) - 1 without duplicates contig 1120 163 -1. 122384262 Sugaram mosaic virus isolate ARG-1662, complete genome 594 122016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1120 163 -1. 122384262 Sugaram mosaic virus isolate ARG-1662, complete genome 585 122016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1135 325 <td>-like pro 92 J</td>	-like pro 92 J
720 121016 1 wwo_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 57 696 121016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 82 699 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 10028 699 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 10028 699 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 10028 699 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1102 695 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 595 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 595 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 595 122016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 505 - 1 GQ421689 505 - 1 GQ42	
695 121016.1 two_Johnson_grass_GTCCGC_L003.R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 82 51 7.06E-149 HE573846 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 609 121016.1 two_Johnson_grass_GTCCGC_L003.R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 1020 117 -1 IX23846 Scallion mosaic virus, complete genome 594 121016.1 two_Johnson_grass_GTCCGC_L003.R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 1120 163 -1 IX316084 Scallion mosaic virus, complete genome 585 121016.1 two_Johnson_grass_GTCCGC_L003.R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 1135 325 1.35E-123 HE573832 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 555 121016.1 two_Johnson_grass_GTCCGC_L003.R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 135 325 1.35E-123 HE573832 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 555 121016.1 two_Johnson_grass_GTCCGC_L003.R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 135 325 1.35E-123 HE573832 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 555 121016.1 two_Johnson_grass_GTCCGC_L003.R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 135 325 1.35E-123 HE573832 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c	99 1
609 121016 1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 10028 117 -1 JX237862 Sugarcane mosaic virus isolate ARG-1662, complete genome 594 121016_1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1120 163 -1 JX15084 Scallion mosaic virus, complete genome 585 121016_1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 325 1.35E-123 HS2044 Scallion mosaic virus partial gene for polyprotein, P1-helper of 585 121016_1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 531 355 -1 IGQ421689 Maire dwarf mosaic virus partial gene for polyprotein, P1-helper of 585 121016_1 two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 531 355 -1 IGQ421689 Canna Yellow Streak Virus from United Kingdom, complete genom	
594 121016 1 two_obhnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 1120 163 -1 AJ316084 Scallion mosaic virus, complete genome 585 121016 1 two_obhnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 135 325 1.35E-123 HE573822 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 555 122016 1 two_obhnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 135 325 1.35E-123 HE573822 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper c 555 122016 1 two_obhnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) -1 without duplicates contig 531 355 -1 (GQ421689 C Cana Yellow Streak Virus from United Kingdom, complete genom	
585 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 135 325 1.35E-123 HE573832 Maize dwarf mosaic virus partial gene for polyprotein, P1-helper or 555 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 531 355 -1 GQ421689 Canna Yellow Streak Virus from United Kingdom, complete genom	80 /
555 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 531 355 -1 (GQ421689 Canna Yellow Streak Virus from United Kingdom, complete genom	100 [
549 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 132 871 0 JQ403608 Maize dwarf mosaic virus isolate OH-1, complete genome	100 J
546 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 5600 166 -1 EF012720 Grapevine leafroil-associated virus 2 isolate PG11 heat shock prot	
510 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 27043 305 9.57E-118 JN021933 Sugarcane mosaic virus isolate BD8, complete genome	100 1
504 121016 1 two Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 10025 245 -1 N022610 Grapevine fleck virus isolate BF coat protein gene, complete cds	57 1
495 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 955 132 -1 NX133927 Grapevine fleck virus isolate SK18 coat protein gene, partial cds	67 I
474 121016_1_two_Johnson_grass_GTCCGC_1003_R1 (paired) trimmed (paired) 1 without duplicates contig 8877 198 -1 FJ687403 Barley yellow dwarf virus-PAV isolate Yaz-1194 RNA-dependent RI	
471 121016 1 two Johnson grass_GTCCGC_L003 R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 6878 238 4.51E-98 [X188385] Sugarcane mosaic virus isolate Ohio, complete genome	95 1
468 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 2043 117 -1 AB520994 Apple chlorotic leaf spot virus MP gene for movement protein, con 447 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 2293 179 -1 AV439544 Potato virus Y gene for polyprotein, genomic RNA, isolate SON41	plete cd: 79 E 67 (
447 121016_1_two_bhnson_grass_GTCGCC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates contig 2293 179 -1 A/439544 Potato virus Y gene for polyportein, genomic RNA, isolate SON41 44 121016 1 two bhnson grass_GTCGCC_L003_R1 (paired) trimmed (paired) -1 without duplicates contig 11 337 1.88E-100 FM83164 Maiz dwarf mosaic virus polyportein, isolate MV801 a more transition of the two binson for two bin	
444 121016_1_two_Johnson_grass_GTCCG_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 11 337 1.85E-190 PM0840360 Maize dwart mosaic virus polyprotein, isolate MV0801, genomic Xi 444 121016_1_two_Johnson_grass_GTCCG_L003_R1 (paired) trimmed (paired) trimmed (paired) - without duplicates contig 15 259 1.12E-89 0.4003609 Maize dwart mosaic virus polyprotein, isolate 0H-2, complete genome	100 / 100 /
444 12/016_1_wo_johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 75 25 1.126-93 (vol3001) maize dwart mosalic virus isolate Oi-2; complete genome 426 12/016_1_two_johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 79 294 2.86E-93 (vol3001) Maize dwart mosalic virus isolate Oi-2; complete genome	100 (
426 122016 1 two Johnson grass GFCCGC L003 R1 (paired) trimmed (paired) tr	98 1
414 122016_1_wo_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) tri	
411 12200 Wo Johnson grass_GTCCGC_L003_R1 (paired) trimmed (paired) tr	
405 122016 1 two Johnson grass_GTCCGC L003 R1 (paired) trimmed (paired) tr	98 /
399 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) tr	100 1
399 122016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) tr	70 /
396 121016 1, two Johnson grass_GTCCGC_L003_R1 (paired) trimmed (paired) t	98 1
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387 121016 1 two Johnson grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) -1 without duplicates coming 528 18 -1 [Gc121676 Pineappie bacililiform comosus virus, complete genome	54 1
387 121016 1 two Johnson grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 18194 259 -1 HQ676607 Celery mosaic virus isolate California, complete genome	99 1
381 121016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contid 20136 136 -1 EU489744 Citrus vellow mosaic virus isolate AL, complete genome	65 [
381 121016 1 two Johnson grass_GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 34710 82 1.37E-35 AF478691 Stilbocarpa mosaic bacilliform virus polyprotein gene, partial cds	71)
378 121016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 16 682 2.64E-137 JQ403608 Maize dwarf mosaic virus isolate OH-1, complete genome	100 1
375 121016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) 1 without duplicates contia 279 414 7.71E-107 FM883164 Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic R1	
372 121016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 545 18 -1 AB011819 Clover yellow vein virus genomic RNA for polyprotein, complete or	
357 121016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 35542 78 4.43E-31 Y12433 Pineapple bacililiform virus DNA for RT and RNaseH genes, partial	55]
354 121016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 3919 37 -1 AY157994 Tomato black ring virus isolate MJ segment RNA-2, complete segu	
354 121016 1 two Johnson grass GTCCGC L003 R1 (paired) trimmed (paired) tr	68 /
351 121016 1 two Johnson grass GTCCGC L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 159 238 -1 AF499738 Cocksfoot streak virus, complete genome	99 1
351 121016 1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) tr	A-depen 60 /
348 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) tr	99 /
348 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 5359 354 -1 U87832 Oat blue dwarf virus complete genome	55 /
348 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 23123 371 4.87E-73 AV149118 Sugarcane mosaic virus isolate SCMV-SD, complete genome	95 /
345 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired) 1 without duplicates contig 114 97 -1 FJ218488 Gossyplum punctatum mild leaf curl virus [Gossyplum lobatum] is	
345 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 20886 87 -1 AF220561 Rice tungro bacililiform virus Chainat isolate, complete genome	67 /
339 121016 1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 39120 288 2.31E-68 U57358 Sorghum mosaic virus strain H, complete genome	97 l
333 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 6092 112 7.52E-49 EF101928 Acanthocystis turfacea Chlorella virus 1, complete genome	80 /
330 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 2167 15 -1 AM910401 Dasheen mosaic virus partial CP gene for coat protein, genomic R	
330 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 2252 320 -1 JN133929 Grapevine fleck virus isolate SK29 coat protein gene, partial cds	78 /
330 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 40658 62 7.85E-32 Y12433 Pineapple bacililiform virus DNA for RT and RNaseH genes, partial	56 \
327 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 4577 57 -1 AB046398 Citrus tristeza virus genomic RNA, complete genome, seedling yel	
324 121016 1 two Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 153 1119 0 JQ403608 Maize dwarf mosaic virus isolate OH-1, complete genome	100]
324 121016 1 two Johnson grass_GTCCGC L003 R1 (paired) trimmed (paired) trimmed (paired) - 1 without duplicates contig 8861 35 -1 HQ113105 Lausannevirus isolate 7715, complete genome	69 I
321 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 8474 99 -1 JQ860108 Cymbidium mosaic virus clone NJ-1, complete genome	36 [
318 121016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 3162 3 -1 A7327402 Choristoneura fumiferana defective nucleopolyhedrovirus complet	
312 121016_1 two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 4169 36 -1 J04373 Turnip yellow mosaic virus Club Lake Isolate, complete genome	50 1
312 121016_1_two_Johnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 28422 540 1.12E-76 US7358 Sorghum mosaic virus strain H, complete genome	100 /
303 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 24808 228 5.65E-66 JX286709 Maize chiorotic mottle virus 32 kDa protein, P111, 50 kDa protein 300 121016_1_two_lohnson_grass_GTCCGC_L003_R1 (paired) trimmed (paired) trimmed (paired)-1 without duplicates contig 24808 248 5.55E-173 AU001691 Maize dwarf mosaic virus RNA, complete sequence	
300 121016_1_Wo_jonnson_grass_GrCCCG_U03_N1 (paired) trimmed (paired) trimmed (paired) + without duplicates contig 204 842 5.55E-1/3 AU0UM59132 Supersona mosaic virus KNA, complete sequence 204 (20105_1_b, virus KNA, virus KNA, complete sequence 204 (20105_1_b, virus KNA, virus KNA, complet	100 / Isolate 100 /

RNA-Seq corn samples

32 MDMV-hit contigs0 MCDV-hit contigs5 emaravirus-hit contigs

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Query		Lowest E-v Accession (Greate Accession (Description (identity %)	Greates Accession (Description (po C	
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 10	1221		Maize dwarf mosaic virus isolate OH-1, complete genome	99 HE573847 Maize dwarf mosaic virus p		2316 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 24	2197		Maize dwarf mosaic virus isolate OH-2, complete genome	100 JQ403609 Maize dwarf mosaic virus is		2169 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 27	917		Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RNA	100 FM883164 Maize dwarf mosaic virus p		1689 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 147	719		Maize dwarf mosaic virus isolate OH-1, complete genome	98 JQ403608 Maize dwarf mosaic virus is		1686 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 11	1081		Maize dwarf mosaic virus isolate Golestan, complete genome	100 JQ280313 Maize dwarf mosaic virus is		1593 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 3953	406		Plum bark necrosis and stem pitting-associated virus, complete genor			1476 G
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 54	657		Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RNA	100 HE573821 Maize dwarf mosaic virus p		1473 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1	1154		Maize dwarf mosaic virus isolate OH-1, complete genome	100 JQ403608 Maize dwarf mosaic virus is		1416 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 82	1191		Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RNA	99 FM883164 Maize dwarf mosaic virus p	 100 FM883164 Maize dwarf mi 	1407 F
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 116	422	0 JQ403608	Maize dwarf mosaic virus isolate OH-1, complete genome	100 JQ403608 Maize dwarf mosaic virus is		876 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 142	686	0 DQ973169	Maize dwarf mosaic virus from Argentina polyprotein gene, partial cds	100 DQ973169 Maize dwarf mosaic virus f	 100 DQ973169 Maize dwarf mi 	801 D
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 9886	134	3.33E-154 U60141	High Plains Virus nucleoprotein gene, partial cds	100 U60141 High Plains Virus nucleopre	b 100 U60141 High Plains Vin	729 U
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 445	110	-1 AM411003	Tobacco vein distorting virus cp gene for coat protein, isolate BSh5, ge	83 JN371768 Synechococcus phage S-M	1 100 JN371768 Synechococcut	660 A
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 12841	424	9.81E-135 AY149118	Sugarcane mosaic virus isolate SCMV-SD, complete genome	100 JX188385 Sugarcane mosaic virus is	100 DQ369960 Sugarcane mos	618 JJ
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 9003	92	-1 JF795482	Redbud yellow ringspot virus p4 gene, complete cds	58 FR823302 Raspberry leaf blotch virus	 75 X81426 Simian rotaviru 	576 F
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 220	629	3.22E-85 HE573864	Maize dwarf mosaic virus partial gene for polyprotein, P1-helper comp-	100 HE573864 Maize dwarf mosaic virus p	 100 HE573864 Maize dwarf me 	492 H
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 497	334	9.55E-89 JQ280313	Maize dwarf mosaic virus isolate Golestan, complete genome	97 JQ280313 Maize dwarf mosaic virus is	a 100 JX185302 Maize dwarf me	435 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 543	337	8.82E-92 JX185302	Maize dwarf mosaic virus isolate Italy, complete genome	97 JX185302 Maize dwarf mosaic virus is	99 JX185302 Maize dwarf mi	432 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 143	329	4.17E-88 DQ973169	Maize dwarf mosaic virus from Argentina polyprotein gene, partial cds	100 DQ973169 Maize dwarf mosaic virus f	100 DQ973169 Maize dwarf mi	402 D
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 36	344	1.20E-85 JX185302	Maize dwarf mosaic virus isolate Italy, complete genome	100 JX185302 Maize dwarf mosaic virus is	s 100 JX185302 Maize dwarf mi	390 J.
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 23	641		Maize dwarf mosaic virus isolate OH-1, complete genome	100 JQ403608 Maize dwarf mosaic virus is	a 100 JQ403608 Maize dwarf me	372 A
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 228	25	-1 AB011819	Clover yellow vein virus genomic RNA for polyprotein, complete cds	67 AM273401 Hepatitis C virus subtype 1		372 A
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig	144		Cassava brown streak virus strain Tanzanian, complete genome	68 GQ329864 Cassava brown streak viru		372 F
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 8887	20	-1 AB045371	Apple stem pitting virus gene for RNA polymerase, complete cds	67 GU393334 Infectious bronchitis virus s	83 GU393334 Infectious bron	345 A
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 161	295		Maize dwarf mosaic virus isolate Italy, complete genome	95 JX185302 Maize dwarf mosaic virus is		321 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 57	232		Canna Yellow Streak Virus from United Kingdom, complete genome	98 JQ403609 Maize dwarf mosaic virus is		318 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1297	189		Grapevine leafroll-associated virus 2 isolate PV20 heat shock protein 1			318 JI
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 9158	325		Sugarcane mosaic virus isolate Ohio, complete genome	98 JX188385 Sugarcane mosaic virus ise		318 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1814	14		Mesta yellow vein mosaic virus complete genome, clone FQ-1	67 JN885997 Mournouvirus Monve isolat		315 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 10634	14	-1 AF006733	Sugarcane mosaic virus coat protein gene, partial cds	55 Z48053 Bovine herpesvirus type 1	72 AF006733 Sugarcane mos	312 E
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 488		9.27E-60 FM883164	Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RNA	100 JX185302 Maize dwarf mosaic virus is		306 F
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 40			Maize dwarf mosaic virus isolate Italy, complete genome	100 JX185302 Maize dwarf mosaic virus it		303 J.
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 4780	23		Cassava brown streak virus isolate Namulonge2-1 polyprotein gene, p			297 H
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 44	295		Maize dwarf mosaic virus RNA, complete sequence	100 AJ001691 Maize dwarf mosaic virus F		294 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig			Tomato vellow leaf curl Mali virus-[Ethiopia] segment DNA-A, complete	65 AE004092 Streptococcus pyogenes M		291 A
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 53	278		Maize dwarf mosaic virus from Argentina polyprotein gene, partial cds	100 DQ973169 Maize dwarf mosaic virus f		279 D
121016 LS_GGCTAC_L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1683	286		Maize dwarf mosaic virus polyprotein, isolate Mv0801, genomic RNA	98 FM883164 Maize dwarf mosaic virus p		276 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 9527			Sorghum mosaic virus strain M polyprotein mRNA, partial cds	100 U57360 Sorghum mosaic virus stra		273 U
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 11940			Sri Lankan cassava mosaic virus ac1 gene, ac2 gene, ac3 gene, ac4 c			267 A
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 18534			Rose spring dwarf-associated virus, complete genome	61 AB104413 Red sea bream iridovirus g		264 A
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 11964			Sugarcane mosaic virus isolate BD8, complete genome	100 DQ925429 Sugarcane mosaic virus is		255 JI
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 143	308		Maize dwarf mosaic virus isolate OH-1, complete genome	100 JQ403609 Maize dwarf mosaic virus is		250 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 10331			Calicivirus isolate Geel 2008/Belgium non-structural polyprotein gene.	72 EU864118 Beet necrotic yellow vein v		249 E
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 2600			Maize dwarf mosaic virus gene for polyprotein, isolate SP, genomic RN	99 AM110758 Maize dwarf mosaic virus of		246 A
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 2821	108		Sweet potato feathery mottle virus isolate ARU60b polyprotein, advate SP, genomic RF			246 J
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig			Banana streak Mys virus isolate TRY, complete genome	55 JQ680376 Unidentified phage clone 2		240 S
121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig			East African cassava mosaic virus segment DNAA, complete seguenc			246 A
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig			Sovbean vein necrosis virus isolate Milan TN segment RNA 3, complete sequenc			246 A 246 K
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 8807	49		Potato mop-top virus isolate 54-15 RNA-dependent RNA polymerase g			240 K 243 H
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 8607 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1382	308	1 72E-40 IO403609	Maize dwarf mosaic virus isolate OH-1, complete genome	100 JQ403609 Maize dwarf mosaic virus is		243 H 240 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 18851			Malze dwarf mosaic virus isolate OH-1, complete genome Melon chlorotic mosaic virus isolate 2009-02-04-06 segment DNA-B, c			240 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 12201	48		Squash vein vellowing virus isolate SM2008cHe, complete genome	53 JN797798 Bacillus phage BCU4, com	68 JN797798 Bacillus phage	240 A 237 J
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 2231 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 4054	20		Blackberry virus X polyprotein gene, partial cds	59 AY178667 Human adenovirus type 4		237 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 16756			Cafeteria roenbergensis virus BV-PW1, complete genome	73 AB236322 Honeysuckle yellow vein b		237 D 237 A
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 19498			Grapevine fleck virus isolate SK04 coat protein gene, partial cds	69 AY261359 Bovine herpesvirus 5 strain		237 A 237 JI
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 3001	1/1		Squash vein yellowing virus isolate Sk04 coat protein gene, partial cos	76 BK000394 TPA inf: Human herpesvirus		237 JI 231 J
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 3001 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 11952			Rachiplusia ou multiple nucleopolyhedrovirus, complete genome	34 DQ925427 Sugarcane mosaic virus iso		231 J
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 13833			Cafeteria roenbergensis virus BV-PW1, complete genome	50 HM754638 Sweet potato leaf curl virus		
						231 G 231 H
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 15024 121016 LS GGCTAC L003 R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 16786			Grapevine fleck virus isolate SK80 coat protein gene, partial cds Moumouvirus Monve isolate Mv13-mv, partial genome	69 JN699628 Mycobacterium phage Bon 71 AJ309022 Grapevine fleck virus comp		231 H
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1678t 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1064			Mournouvirus Monve isolate MV13-mv, partial genome Maize dwarf mosaic virus partial gene for polyprotein, P1-helper comp			
121015 L3 GOOTAC Louis RT (paired) trimmed (paired) trimmed (paired) trimmed (paired) without dupicates contig 1084	300	1.00E-40 HE0/3864	Replace uwan mosaic virus partial gene for polyprotein, P1-helper comp	71 AV562040 Europeon moustain with	77 HM044520 HM/4 Holder P	222 H
121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1840. 121016 LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 6208	45	1 IN909774	Watercress white vein virus coat protein gene, partial cds	73 AY378798 Hepatitis C virus isolate D1	 AY378798 Hepatitis C viru 	222 F 219 G
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 18265			Pepper mottle virus Florida, complete genome	59 JN671443 Fusarium virguliforme dsRI		219 A
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 380	242		Canna Yellow Streak Virus from United Kingdom, complete genome	100 FM883211 Maize dwarf mosaic virus p		213 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 6302	10		Tomato leaf curl China virus satellite DNA beta isolate JX-2, complete	50 AY027810 Papaya ringspot virus W is		213 G
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 10330			Blueberry necrotic ring blotch virus segment RNA1, complete sequenc			213 JI
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 13086 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 16456	50		Grapevine fleck virus isolate SK79 coat protein gene, partial cds	44 JN133946 Grapevine fleck virus isolat		213 G
	i 10 297		Grapevine fanleaf virus isolate AB26a polyprotein P2 gene, partial cds			213 D
121010_L0_000TA0_L000_R1 (pared) animed (pared) animed (pared) animed (pared) whole depicates control 1000			Maize dwarf mosaic virus isolate OH-2, complete genome	99 JQ403609 Maize dwarf mosaic virus is	a 100 JQ403609 Maize dwarf mi	210 J
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1590			Undergroup chloratic mettic view insists M7, consulate metric	CE AFOCOCO Kanadia anno 1		
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1789	101	-1 EU754720	Hydrangea chlorotic mottle virus isolate NZ, complete genome	65 AF068830 Kaposi's sarcoma-associat	6 71 AF068830 Kaposi's sarcor	210 A
121016_LS_GGCTAC_L003_R1 (paired) trimmed (paired) trimmed (paired) trimmed (paired) without duplicates contig 1590	101	-1 EU754720 -1 JX286706	Hydrangea chlorotic mottle virus isolate NZ, complete genome Sugarcane mosaic virus P1 gene, partial cds Maize dwarf mosaic virus isolate Italy, complete genome	65 AF068830, Kaposi's sarcoma-associat 86 JQ403609 Maize dwarf mosaic virus is 100 JX185302 Maize dwarf mosaic virus is	 AF068830 Kaposi's sarcor JQ403609 Maize dwarf m 	210 A 210 JJ 207 JJ

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Acknowledgements

SELBY HALL

PLANT PATHOLOGY MCI CENTER Funding:

USDA-ARS

Ohio Small Grains Marketing Program

Field sampling: Ohio growers Mike Estadt Hal Kneen Eric Barrett

USDA Agricultural

Research

Service

Acknowledgements:

Mark Jones Jane Todd Edgar Umanzor Chris Nacci Rachéle Teplier Mike Estadt Hal Kneen Eric Barrett Dr. Ray Louie Ohio Corn Growers RNA-Seq & Bioinformatics: Bryan Cassone MCIC: Saranga & Asela Wjeratne Anne Dorrance OSU RNA-Sequencing