

OA1228-1 (Avena sativa L)

Dr. Weikai Yan, Oat breeder
Eastern Cereal and Oilseed Research Centre (ECORC)
960 Carling Ave., Neatby Building,
Ottawa, ON, Canada, K1A 0C6
Phone: 613-759-1304
yanw@agr.gc.ca

OA1228-1 Covered Spring Oat

OA1228-1 is a covered spring oat with grayish colored hulls. It was derived from the crosses 08589 made in AAFC at Ottawa in April 2002. Its parentage is OA1031-2/07836-2-5-2-1a-4, where OA1031-2 was derived from the cross OA973-1/OAC Arrow and 07836-2-5-2-1a-4 was from 07396-1-3/07397-2-2. The line 07836-2-5-2-1a-4 has the variety Capital several times in its pedigree; it probably possesses the crown rust resistant gene PC61 inherited from Coker 234. OA1228-1 was derived from a pedigree breeding method. It was first tested as 08589-4-4-b-2 for yield in 2006 at Ottawa, then as OA1228-1 at five locations across eastern Canada (two in Ontario, two in Quebec and one in Prince Edward Island) in 2007. Formal registration test was conducted at 13 locations in 2008-2009 across Canada.

Across 11 valid tests in 2008 and 2009 within Ontario, OA1228-1 achieved a yield performance index of 119. It yielded higher than the best check in 9 of the 11 valid tests (with CV's lower than 16%, Table 1). It also yielded better than the check means at locations in other provinces, although the data are not required for the current purpose. Its high and stable yield probably results from its excellent crown rust resistance (Table 10) and lodging resistance (Table 2). It also has better resistance to Septoria and stem rust than all check cultivars (Tables 11 and 12). OA1228-1 is as short as Sherwood and Manotick and is 15 cm shorter than Rigodon. OA1228-1 headed 2 days later than the latest check Rigodon (Table 4). It has the same groat percentage as the best check (Sherwood) (Table 7), similar protein content as the checks (Table 8), and the lower oil content than all checks (Table 9). Its test weight is as high as the best check (Table 5) but its seeds are significantly smaller than the checks (Table 6). OA1228-1 has lower beta-glucan content than the checks (Table 14).

Table 1. Yield performance (kg/ha)

	Year	Site		CV (%)	Reps	OA1228-1	Manotick	Rigodon	Sherwood	% of check mean	% of best check
1	2008	Belgrave	ON	14	4	3131	1689	1378	1251	218	185
2	2008	Eganville	ON	25	4	(4825)	3762	3438	3420	(136)	(128)
3	2008	Nairn	ON	8	4	4020	4004	3813	3928	103	100
4	2008	New Liskeard	ON	14	4	4674	4756	5390	5274	91	87
5	2008	Ottawa	ON	10	4	3315	2272	2434	1914	150	136
6	2008	Palmerston	ON	10	4	5219	3452	3516	4131	141	126
7	2008	St Marys	ON	7	4	5108	4844	4002	4335	116	105
8	2009	Eganville	ON	28	4	(2834)	2346	2594	3317	(103)	(85)
9	2009	Nairn	ON	6	4	4211	3398	3674	2502	132	115
10	2009	New Liskeard	ON	10	4	4820	4208	4721	4506	108	102
11	2009	Ottawa	ON	14	4	4890	4593	4798	4760	104	102
12	2009	Palmerston	ON	9	4	5666	6137	5655	5800	97	92
13	2009	St Marys	ON	9	4	3545	2344	1864	1183	197	151
Mean						4328	3677	3637	3563	132	118
		Yield index				119					
Additional yield data											
14	2008	Lacombe	AB		1	9084	6735	7812	7660	123	116
15	2008	Glenlea	MB		1	5352	6156	6729	6276	84	80
16	2008	Portage	MB		1	5277	4807	3970	6147	106	86
17	2008	Harrington	PEI	13	3	2431	2507	2486	2447	98	97
18	2008	Amqui	QC	18	3	6026	3650	4830	4437	140	125
19	2008	Hebertville	QC	7	3	6807	6127	7409	6644	101	92
20	2008	Normandin	QC	8	3	6358	5015	6858	6415	104	93
21	2008	Princeville	QC	9	3	5066	4976	4938	4602	105	102
22	2009	Lacombe	AB	7	3	2975	2452	2847	2587	113	105
23	2009	Portage	MB	9	3	2839	2639	2708	3075	101	92
24	2009	Harrington	PEI	14	3	2781	2736	2507	3272	98	85
25	2009	Normandin	QC	9	3	3620	2060	4023	3205	117	90
26	2009	Princeville	QC	9	3	5456	5074	5870	5014	103	93
Mean						4929	4226	4845	4752	107	97

Table 2. Lodging (0-9)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Amqui_08	6.3	5.7	4.3	4.2
OatReg_Eganville_08	0.0	3.3	8.3	5.3
OatReg_Hartland_08	2.8	1.4	2.8	0.0
OatReg_Hartland_09	2.4	2.4	2.4	2.4
OatReg_HEBE3_08	0.0	1.7	1.3	5.7
OatReg_Lacombe_09	0.0	0.0	0.0	0.0
OatReg_NewLisk_08	3.3	6.8	5.3	5.5
OatReg_NewLisk_09	0.0	0.8	2.5	2.5
OatReg_norm3_08	5.7	1.3	5.7	8.3
OatReg_norm3_09	1.3	3.0	2.7	5.3
OatReg_OTT_09	0.3	2.0	3.8	1.8
OatReg_Palmerston_08	2.0	4.3	6.0	2.3
OatReg_PEI_08	1.7	1.3	5.0	5.3
OatReg_PEI_09	1.7	6.7	2.7	7.0
OatReg_Portage_09	1.0	1.0	5.0	1.7
OatReg_prin2_08	0.0	1.0	0.5	4.3
OatReg_prin2_09	0.3	5.7	0.2	5.3
OatReg_St Marys_08	4.5	3.3	3.0	4.3
Prelim3_OTT_07	4.0	3.0	6.6	5.8
Mean	2.0	2.9	3.6	4.0

Table 3. Height (cm)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Amqui_08	96	91	110	93
OatReg_Belgrave_08	103	100	114	110
OatReg_Glenlea_08	95	93	110	100
OatReg_HEBE3_08	115	107	132	106
OatReg_Lacombe_08	114	101	128	101
OatReg_Lacombe_09	110	113	136	111
OatReg_Nairn_09	101	103	119	94
OatReg_NewLisk_08	106	101	121	107
OatReg_NewLisk_09	72	74	89	79
OatReg_norm3_08	97	89	119	102
OatReg_norm3_09	79	70	95	85
OatReg_OTT_08	84	86	91	83
OatReg_OTT_09	88	86	106	93
OatReg_Palmerston_08	121	117	129	118
OatReg_Palmerston_09	117	130	140	118
OatReg_PEI_08	111	110	134	104
OatReg_PEI_09	115	115	131	116
OatReg_Portage_08	92	95	105	96
OatReg_Portage_09	112	113	129	115
OatReg_prin2_08	93	100	108	89
OatReg_prin2_09	108	102	113	103
OatReg_St Marys_08	107	106	120	103
OatReg_St Marys_09	100	101	105	93
Prelim3_Bornholm_07	72	83	85	78
Prelim3_OTT_07	86	91	99	95
Mean	100	99	115	100

Table 4. Days to Heading (d)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Nairn_08	45	42	38	29
OatReg_NewLisk_08	68	64	61	63
OatReg_NewLisk_09	79	76	76	75
OatReg_OTT_08	28	23	26	26
OatReg_OTT_09	74	68	70	69
OatReg_Palmerston_08	69	60	65	60
OatReg_Palmerston_09	65	57	63	56
OatReg_PEI_08	46	41	29	27
OatReg_PEI_09	62	56	60	56
OatReg_Portage_09	63	55	60	54
OatReg_St Marys_08	23	41	68	40
OatReg_St Marys_09	63	58	62	59
Prelim3_Bornholm_07	55	48	54	47
Prelim3_OTT_07	41	28	29	36
Mean	56	51	54	50

Table 5. Test Weight (kg/hi)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Amqui_08	52	47	52	47
OatReg_Belgrave_08	45	35	37	35
OatReg_Eganville_08	54	48	47	50
OatReg_Eganville_09	54	55	56	53
OatReg_Glenlea_08	57	54	59	55
OatReg_HEBE3_08	60	57	62	59
OatReg_Lacombe_08	54	50	57	52
OatReg_Nairn_08	53	49	54	53
OatReg_Nairn_09	43	39	41	40
OatReg_NewLisk_08	43	39	46	43
OatReg_NewLisk_09	44	41	45	45
OatReg_norm3_08	57	53	59	52
OatReg_norm3_09	57	53	60	54
OatReg_OTT_08	55	34	56	44
OatReg_OTT_09	57	53	59	56
OatReg_Palmerston_08	39	42	41	43
OatReg_Palmerston_09	50	50	50	49
OatReg_PEI_08	47	46	48	47
OatReg_PEI_09	52	50	52	50
OatReg_Portage_08	58	54	59	55
OatReg_prin2_08	55	54	59	54
OatReg_prin2_09	58	54	58	53
OatReg_St Marys_08	45	45	45	44
OatReg_St Marys_09	32	15	20	19
Mean	51	46	51	48

Table 6. Thousand Kernel weight (g)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Amqui_08	34	36	37	37
OatReg_Belgrave_08	26	33	27	27
OatReg_Eganville_08	36	41	34	40
OatReg_Eganville_09	32	43	42	40
OatReg_Glenlea_08	29	38	35	36
OatReg_HEBE3_08	33	40	41	41
OatReg_Lacombe_08	32	40	39	42
OatReg_Nairn_08	30	34	35	37
OatReg_Nairn_09	38	40	39	37
OatReg_NewLisk_08	33	39	41	40
OatReg_NewLisk_09	43	50	51	50
OatReg_norm3_08	34	39	38	36
OatReg_norm3_09	34	39	41	40
OatReg_OTT_08	32	36	34	33
OatReg_OTT_09	35	40	41	39
OatReg_Palmerston_08	29	38	30	33
OatReg_Palmerston_09	36	31	37	37
OatReg_PEI_08	26	37	32	34
OatReg_PEI_09	31	41	39	38
OatReg_Portage_08	31	40	41	39
OatReg_prin2_08	32	41	41	39
OatReg_prin2_09	30	40	39	34
OatReg_St Marys_08	27	38	31	32
OatReg_St Marys_09	33	35	30	29
Prelim3_Bornholm_07	31	42	39	42
Prelim3_OTT_07	34	40	38	42
Mean	32	39	37	37

Table 7. Groat (%)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Belgrave_08	74	67	68	71
OatReg_Eganville_08	76	76	72	72
OatReg_Glenlea_08	79	77	76	79
OatReg_Hartland_08	77	71	73	76
OatReg_HEBE3_08	80	75	75	81
OatReg_Lacombe_08	78	75	77	81
OatReg_Nairn_08	75	72	71	76
OatReg_NewLisk_08	78	73	76	78
OatReg_norm3_08	78	74	74	78
OatReg_OTT_08	78	76	73	73
OatReg_Palmerston_08	77	75	74	80
OatReg_PEI_08	75	71	70	75
OatReg_Portage_08	78	75	75	78
OatReg_prin2_08	76	73	74	76
OatReg_St Marys_08	73	71	69	72
Prelim3_OTT_07	81	76	76	81
OatReg_NewLisk_09	73	73	74	76
OatReg_norm3_09	76	72	74	77
OatReg_OTT_09	77	74	74	76
Mean	77	73	73	77

Table 8. Protein (%)

	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Belgrave_08	13	14	14	13
OatReg_Eganville_08	12	12	11	13
OatReg_Glenlea_08	12	13	12	12
OatReg_HEBE3_08	11	13	13	12
OatReg_Lacombe_08	15	16	15	15
OatReg_Nairn_08	13	15	15	13
OatReg_NewLisk_08	14	15	15	14
OatReg_norm3_08	13	13	13	12
OatReg_OTT_08	10	10	9	11
OatReg_Palmerston_08	12	14	12	11
OatReg_PEI_08	12	14	13	12
OatReg_Portage_08	10	13	12	12
OatReg_prin2_08	9	11	11	10
OatReg_St Marys_08	13	14	13	13
Prelim3_OTT_07	15	15	13	14
OatReg_OTT_09	12	14	11	12
Mean	12	13	13	12

Table 9. Oil (%)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Belgrave_08	6	9	10	8
OatReg_Eganville_08	3	4	5	4
OatReg_Glenlea_08	5	4	7	5
OatReg_HEBE3_08	3	4	7	5
OatReg_Lacombe_08	5	6	8	6
OatReg_Nairn_08	6	7	9	7
OatReg_NewLisk_08	5	6	8	6
OatReg_norm3_08	3	4	7	4
OatReg_OTT_08	4	4	6	5
OatReg_Palmerston_08	3	4	5	4
OatReg_PEI_08	5	6	8	6
OatReg_Portage_08	5	6	7	6
OatReg_prin2_08	4	5	8	5
OatReg_St Marys_08	7	8	10	8
Prelim3_OTT_07	5	6	9	7
OatReg_OTT_09	6	6	9	7
Mean	5	6	8	6

Table 10. Crown Rust (0-9 scale)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Belgrave_08	0.9	6.0	6.5	5.8
OatReg_Nairn_09	0.1	5.3	5.0	6.4
OatReg_OTT_08	1.8	7.3	7.5	7.5
OatReg_OTT_09	1.5	3.3	3.8	3.5
OatReg_Palmerston_08	0.5	4.0	3.5	3.0
OatReg_Palmerston_09	0.0	6.5	5.5	5.5
OatReg_St Marys_09	1.5	5.0	5.6	5.7
Prelim3_OTT_07	0.0	3.0	3.0	1.5
Mean	0.8	5.0	5.0	4.8

Table 11. Septoria (0-9 scale)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Palmerston_08	2.0	3.5	2.8	4.0
OatReg_Palmerston_09	4.5	7.0	4.0	6.5
OatReg_PEI_08	1.3	3.0	2.0	4.7
OatReg_PEI_09	4.7	4.7	3.0	5.7
OatReg_St Marys_08	4.0	5.0	4.0	5.0
OatReg_St Marys_09	5.3	7.3	7.8	7.3
Prelim3_OTT_07	0.3	0.3	1.5	2.8
Mean	3.2	4.4	3.6	5.1

Table 12. Stem Rust (0-9 scale)

Trials	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Belgrave_08	1.5	2.0	3.5	3.0
OatReg_Nairn_09	4.3	3.1	4.3	3.5
OatReg_OTT_08	3.0	6.0	6.0	5.0
OatReg_St Marys_08	3.5	2.3	2.8	3.3
OatReg_St Marys_09	1.3	3.7	4.3	4.7
Mean	2.7	3.4	4.2	3.9

Table 13. BYDV (0-9 scale)

	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Nairn_09	3.5	2.9	4.1	2.9
OatReg_St Marys_09	2.5	2.5	3.6	2.8
Prelim3_Bornholm_07	4.0	3.5	3.0	2.0
Prelim3_OTT_07	0.3	0.5	0.3	0.0
Mean	2.6	2.3	2.8	1.9

Table 14 Beta-glucan (%)

Trial	OA1228-1	Manotick	Rigodon	Sherwood
OatReg_Lacombe_08	4.1	5.2	4.9	4.6
OatReg_MEAN_08	4.0	4.7	4.4	4.5
OatReg_NewLisk_08	3.6	4.5	4.3	4.4
OatReg_NewLisk_09	3.1	3.2	3.6	3.6
OatReg_norm3_08	3.9	4.6	3.5	4.2
OatReg_norm3_09	3.3	3.9	3.8	3.6
OatReg_OTT_08	4.3	4.7	4.6	4.7
OatReg_OTT_09	2.9	3.7	3.7	3.9
OatReg_PEI Harrington_08	4.5	5.5	4.2	4.8
OatReg_prin2_08	3.7	3.7	4.0	4.0
OatReg_St Mary's_08	4.0	4.5	5.4	5.0
Mean	3.8	4.4	4.2	4.3