

## Economic Evaluation of Spring Wheat vs. Barley Potential

### Purpose:

In 2006, Ontario farmers planted over 140,000 acres of spring wheat, the largest on record. There is a growing market demand for spring wheat with a large flour milling industry located in Ontario. The economics of spring wheat appear very attractive with the price in 2006 at around \$180/t. However, growers have experienced variable yields with spring wheat in the past and question if the economic returns are higher than barley. Newer higher yielding spring wheat varieties are being offered. Spring wheat offers the potential for farmers to participate in a higher value end market and to continue to diversify crop rotations and income sources.

In 2006, the Georgian Region Soil & Crop Improvement Association initiated a 3 year project to evaluate the yield, quality and returns from spring wheat and barley. A second objective was to evaluate seeding rates for spring wheat.

**Methods:** Field-length strips of barley and spring wheat were planted applying the correct inputs for each crop. Nitrogen was applied at 80 lb/ac actual to spring wheat and 40–50 lb/ac to barley. A foliar fungicide was applied to plots if required where it was practical. Each site included 2 replications. Final plant population, yield, moisture, test weight and protein information was collected. At 7 of the 10 sites, three spring wheat seeding rates were compared; 1.2, 1.6, & 2.0 million seeds/ac. These sites were seeded using the Middlesex Soil & Crop JD 1560 no-till drill. The current recommended spring wheat seeding rate is 1.4 – 1.6 m seeds/ac. Two seeding rates were employed for barley at these locations; 1.0 and 1.4 million seeds/ac.

### Results:

The spring of 2006 was warm and dry, allowing growers to plant the majority (65%) of spring cereal crop before the last week in April. This was especially important for spring wheat, which has significantly better yield potential when seeded very early. The average yield of the spring wheat crop was 49.2 bu/ac, with yields of over 70bu/ac reported. The plots were all planted during the last 2 weeks in April into excellent soil conditions. The yield and returns for each of the 10 locations are presented in Table 1. The average yield across locations was 49 bu/ac for spring wheat and 76 bu/ac for barley. Cash income was calculated using a crop price of \$180/t for spring wheat and \$120/t for barley. Costs were based on 2006 Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) crop budgets, excluding land costs and costs for bailing straw. The returns for straw are not included since no straw yields were collected, even though this is an important component in determining overall profitability.

### Year 1 Preliminary Results.

Quality of the spring wheat was good at all locations and all samples achieved the maximum protein premium. Dry weather took its toll on yields. The average return over costs was \$18/acre for spring wheat and \$(-2)/acre for barley. The highest return was \$117/ac from spring wheat that yielded 70 bu/ac at Arthur 1 site. At none of the sites did the return from barley exceed \$50/acre. Spring Wheat produced higher returns than barley at 6 out of the 10 sites.

## Crop Advances: Field Crop Reports

**Table 1 - Comparison of Yield & Economics Of Spring Wheat Vs Barley**

Location	Planting Date	Wheat Yield	Barley Yield	Wheat Income	Wheat Return	Barley Income	Barley Return
		bu/ac	bu/ac	\$/ac	\$/ac	\$/ac	\$/ac
Durham	5-May	40	62	196	-\$25	162	-\$37
Ayton	21-Apr	45	62	220	-\$1	162	-\$37
Arthur 1	27-Apr	70	95	343	\$117	248	\$44
Arthur 2	2-May	51	86	250	\$27	224	\$22
Grand Valley	3-May	60	87	294	\$70	227	\$24
Grand Valley 2	3-May	37	65	181	-\$39	170	-\$29
Listowel	4-May	50	97	245	\$23	253	\$49
Arthur 3	26-Apr	49	62	240	\$18	161	-\$37
Stayner	5-May	38	82	186	-\$34	206	\$12
Elmira	3-May	50	65	245	\$23	170	-\$29
		Average Net Return/acre			\$18		\$-2

Note: Input costs for Barley = \$188 + trucking, Wheat = \$214 + trucking.

### Spring Wheat Seeding Rate Comparison

The current OMAFRA recommended seeding rate for spring wheat is 1.4 – 1.6 million seeds/ac. This trial evaluated 3 seeding rates, 1.2, 1.6, and 2.0 m seeds/ac (Table 2). Final stand counts achieved were 60% across all target seeding rate. The final stand counts were lower than expected, even though the drill was calibrated for seeding rate on several occasions. This will be reviewed for 2007. There was a slight trend to higher yield with the 1.6 and 2.0 seeding rate (Table 3). In previously conducted trials with earlier planting dates, we have not seen a yield increase with higher seeding rates.

**Table 2 - Spring Wheat final populations**

Location	Seeding rate in million seeds/ac		
	1.2 m/ac	1.6 m/ac	2 m/ac
	<b>Plants /ac (million/ac)</b>		
Arthur 1	0.83	1.0	1.2
Arthur 2	0.76	0.98	1.2
Grand Valley	0.69	0.82	0.94
Grand Valley 2	0.83	1.0	1.2
Listowel	0.81	1.1	1.5
Elmira	0.74	1.0	1.35
Arthur 3	0.71	0.80	0.97
Arthur 4	0.73	0.94	1.2
<b>Average m/acre</b>	<b>0.76</b>	<b>0.97</b>	<b>1.2</b>

**Table 3 - Comparison of Spring Wheat Seeding Rates**

Location	Seeding rate million seeds/ac		
	1.2	1.6	2 m/ac
Yield bu/ac			
Arthur 1	72	73	73
Arthur 2	51	51	51
Grand Valley	57	59	63
Grand Valley 2	35	38	38
Listowel	48	49	53
Elmira	46	52	52
Arthur 3	48	48	51
Arthur 4	64	66	68
Average bu/ac	53	55	56

No comparison for barley seeding rate is presented due to too few locations.

**Summary:**

Preliminary results from this study indicate:

- The return from wheat exceeded that from barley at 6 of the 10 sites. Spring wheat returned \$20/acre more than barley averaged over all sites excluding straw income.
- A Trend to higher yields of spring wheat with higher seeding rates when planted in the last week of April.

**Next Steps:**

The project is to be continued for 2 more years. In 2007, the goal will be to plant some sites at an earlier date.

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