

# Performance of Commercial Wheat Varieties under Organic Production

Michelle K. Carkner and Martin H. Entz  
Department of Plant Science, University of Manitoba, Canada



## Key Questions

Agronomists and crop consultants are seeing more organic wheat production on the Prairies, which raises new questions:

“Are the **best wheat varieties** in **conventional** production going to perform best in **organic** production?”

“Does AAC Tenacious, a variety with **good FHB resistance**, **perform well** under **organic conditions**?”

## Experimental Methods

Data presented are organized two groups:

### 2014-2021 data

3 varieties

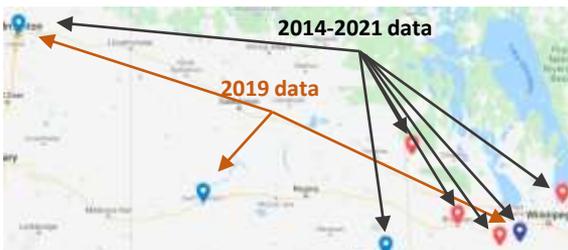
Low yield\* (7 site years)

High yield (8 site years)

### 2019 data

4 varieties

High yield (3 sites)



## Results

Results are presented only where all the varieties were included in all site-years

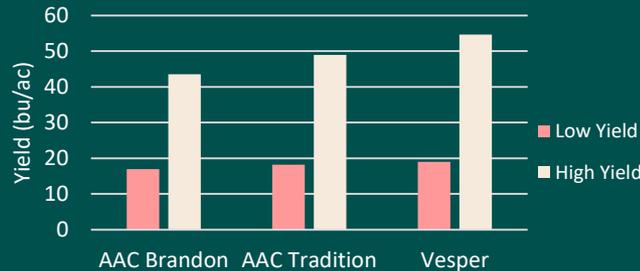


Figure 2. Average yield of low and high yield sites of three varieties of wheat grown under organic conditions

Table 1. Yield range, height, and days to maturity (DTM) from low (L) and high (H) yielding sites from 2014-2021

Variety	Yield range (bu/ac)		Height ±81cm		DTM ±99 days	
	L	H	L	H	L	H
AAC Brandon	8-21	21-72	-24	-2	-10	-9
AAC Tradition	7-31	34-83	-19	5	-9	-8
Vesper	10-29	32-75	-18	11	-10	-11

Table 2. Yield range, height, and days to maturity (DTM) from 2019 data

Variety	Yield range (bu/ac)	Height ±81cm	DTM ±99 days
AAC Tenacious	30.5-70.6	16.3	-7
AAC Tradition	40.5-101.2	5.3	-3.8
Glenn	31.7-112.8	6.6	-8.1
Vesper	41.2-94.1	9.7	-8.6

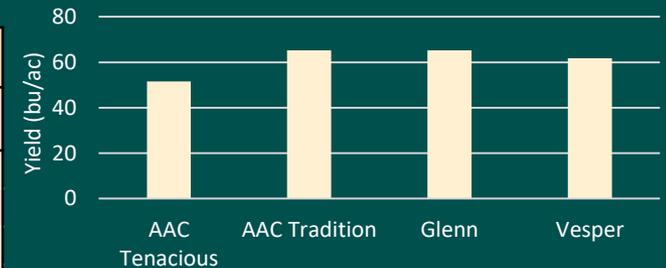


Figure 3. Average yield of 2019 of four varieties of wheat grown under organic conditions

## Key Findings

- **AAC Brandon**, the most commonly grown variety grown by organic farmers, yielded less than some of commercial cultivars under both high and low-yielding organic conditions (figure 2, Table 1).
- **Vesper** performed consistently well under organic conditions, even under very stressful environments (figure 2, Table 1).
- **AAC Tradition** was bred specifically for organic production conditions by AAFC. It yielded more than AAC Brandon at all sites and comparable with Vesper (figure 2, Table 1).
- Organic farmers with **FHB pressure** interested in **AAC Tenacious: Variety performed well** under organic conditions with adequate fertility soil conditions (figure 3).

## Take home message:

Organic famers may not be growing the best variety for their production system.

Consistent organic varietal performance data is required to ensure the success of organic farms across Manitoba

Figure 1. Locations of experiments presented. Blue pin= 'high yield'. Pink pin = 'low yield'. Purple pin= both 'high' and 'low' data.

\*Low yield due to low soil test phosphorus and/or drought and/or heavy weed pressure