

**NEW from
MSU**

Lowell

A NEW
SOFT WHEAT VARIETY

for Michigan

- High yield
- Resistant to powdery mildew
- Resistant to wheat spindle streak virus
- Early maturing

Lowell is a soft white winter wheat developed by Michigan State University. It combines high yield potential and early maturity with excellent milling and baking qualities. Certified seed of Lowell became available in 1994.

Variety Description

Lowell is a beardless variety with large, white seeds and white chaff at harvest, is slightly shorter than Augusta and flowers 3-5 days earlier. Its winterhardiness is similar to that of Augusta or Frankenmuth. Lowell's resistance to lodging is poor. Consequently, growers are advised to avoid excessive use of spring nitrogen. It has good field resistance to powdery mildew and wheat spindle streak virus and

some leaf rust resistance. However, this resistance can break down when challenged by virulent leaf rust races.

Performance

Agronomic and quality performance data for Michigan tests conducted between 1990 and 1995 are summarized in Table 1. In multi-location yield tests conducted in Michigan in 1990 through 1995, Lowell averaged 77.6 bushels per acre across multiple site years, compared with 75.3, 71.6 and 68.9 bushels per acre for Chelsea, Augusta and Frankenmuth, respectively. Lowell's test weight is slightly below average (1 to 2 lbs) and is usually similar to that of Augusta.

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Extension

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Yearly evaluations at the USDA Soft Wheat Quality Laboratory in Wooster, Ohio have shown that Lowell exhibits superior milling and baking properties.

Breeding Background and Pedigree

Lowell is a pure-line selection from the 1978 cross 780756, which has the parentage X0467/B2141//B5250. A line derived from that cross and designated as C4827 was evaluated in yield trials from 1985 through 1987. Manual separation and increase of white and red seed of C4227 during 1988 generated two sister lines designated C4227 (red seed) and C4827 (white seed). C4827 was evaluated in yield trials in 1989 through 1995. Breeder seed of Lowell was initially constituted in 1990 from yield test derived F4:11 seed of C4827. Milling and baking quality evaluations have been conducted on Lowell since 1989. C4227 was released as Mendon.

Type of Release and Seed Availability

Lowell is released as a nonexclusive public variety to certified seed producers in Michigan. A research fee is being assessed on all certified seed produced in Michigan as well as in other states where Lowell may be grown. For a list of Lowell seed producers, contact the Michigan Crop Improvement Association (Tel. 517/355-7438), P.O. Box 21008, Lansing, MI 48909-1008.

Best Management of Lowell Wheat

1. Crop Rotation

Plant Lowell following dry edible beans or soybeans. Because of disease potential, do not plant wheat where other small grains and/or corn were the previous crops. Make sure previous

crop residue is evenly spread. If wheat is to follow soybeans, plant an early maturing soybean variety.

2. Land Selection and Preparation

Select well-drained, medium textured, non-compacted soils for optimum yields. All tillage and planting should be done when the soil is dry. Yields of no-till versus conventional till wheat have been comparable. **DO NOT MUD IN WHEAT!** Minimum tillage (single pass) may also be used with appropriate direct drilling equipment.

3. Seeding Practices

Plant seed $\frac{3}{4}$ to 1 $\frac{1}{2}$ inches deep. Drills should have good depth control, accurate calibration, and row width of 7 inches or less. Because of variability in seed size from year to year (up to 35%), planting on the basis of bushels per acre **IS NOT RECOMMENDED!** Plant 21 to 28 seeds per foot (1.6 to 2.1 million seeds per acre in 7-inch rows). The actual number of pounds per acre planted should be based on the number of seeds per pound of each seed lot, which can vary as much as 30% among seed lots. (Consult Extension Bulletin E-2518, *Seeding Practices for Wheat in Michigan*, for details.) Increase planting rates after the first week of October. If broadcast planting is used, increase seeding rates by 15 to 20 percent and work the seed into the soil.

4. Planting Date

Fall disease infection is generally diminished by later planting, but yield potential declines with late planting. Plant any time after the Hessian fly free date for as long as soil and weather conditions permit. The fly free date varies throughout Michigan, so check with the local extension office or your seed supplier to make certain of the date in your area.

5. Fertility Practices

Multi-year research results indicate that Lowell is more susceptible to lodging than most other wheat varieties available in Michigan. For this

reason, use no more than 80 lb spring-applied nitrogen. Use a fall starter application of 10 to 20 lbs of nitrogen at planting time and P & K amounts as indicated by recent soil tests. **AVOID USING ANIMAL MANURE AS A NITROGEN SOURCE!**

6. Weed Control

Control of annual and perennial weeds before planting is critical for optimum production. If proper stands are achieved, chemical weed control in wheat may not be needed. If chemical weed control is used in existing stands, apply at the appropriate time and rates.

7. Disease Control

Lowell is more susceptible to leaf rust than most other varieties available in Michigan. However, disease control is not needed every year. Therefore, the fields must be scouted to monitor disease pressure. Look for these and other pathogens which can be controlled chemically. The upper two leaves of the wheat plant produce more than 80% of the substrate going into the head. These two leaves should be disease free. If thresholds are reached, use chemical control.

8. Insect Control

Scout fields for armyworm, cereal leaf beetle and aphids. If thresholds are reached, apply sprays.

9. Management is the Key

Any one of the previous suggestions, if not followed, could reduce yields by up to 10% or more. Under high management and good environmental conditions, Lowell yields should consistently be near 80 to 90 bushels per acre. However, the environment still has a major influence on wheat yields. Normal pollination takes place in early June. Drought and hot weather will hurt yields during the first three weeks of June.

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Department of Crop and Soil Sciences

1995
STATE WHEAT VARIETY TRIAL
MULTI-YEAR PERFORMANCE
SUMMARY
 All county sites included

Variety Name	Single Year Multi-site Average Yields (Bushels/acre)										Across Year Averages (bu./acre)						95 Disease Scores (0-9, 0=none)			95 Miscellaneous Data				1994 Quality		
	1990	1991	1992	1993	1994	1995	2 YR 94-95	3 YR 93-95	4 YR 92-95	5 YR 91-95	6 YR 90-95	94	95	PM	MSSV	LR	Lodge Score (0-9)	50% (DOY)	Ht (in)	Chaff/Alwns	Mill	Bake	Origin			
	Test Weight (lbs/bu.)											Grain Color							1994 Quality							
MSU Line 00256					74.2	75.5	74.8					57.4	57.9	W			1.7	0.9	1.2	5.3	161	41	B/N	102	94	MSU
Pioneer Brand 2737w			105.7	60.0	64.0	74.5	69.2	66.1	76.0			55.6	57.0	W			5.1	4.8	2.5	2.4	159	35	W/N	102	100	Pioneer
Chelsea	75.0	66.9	103.9	66.4	66.6	73.1	69.8	68.7	77.5	75.3	75.3	57.7	57.3	W			1.6	1.1	3.1	6.1	161	39	B/Y	100	95	MSU
Lowell	74.9	76.6	103.9	66.5	71.1	72.6	71.8	70.0	78.5	78.1	77.6	54.5	55.2	W			1.4	1.1	5.7	6.0	159	40	W/N	101	107	MSU
MSU Line D1098					68.8	72.3	70.5					56.2	56.5	W			4.5	1.7	0.4	1.6	162	35	W/N	95	98	MSU
Karena		66.4	107.3	59.0	63.2	70.4	66.8	64.2	74.9	73.2		57.0	56.8	W			1.4	8.7	5.5	3.2	163	40	W/N	100	100	Anderson
Augusta	71.1	61.1	102.8	58.6	67.9	68.2	68.0	64.9	74.3	71.7	71.6	56.3	55.5	W			3.7	8.6	6.4	4.5	163	38	W/N	100	100	MSU
Harus	69.0	71.1	101.7	65.6	68.1	68.1	68.1	67.2	75.8	74.9	73.9	56.5	57.5	W			2.9	4.3	3.4	2.2	160	38	B/N	98	105	Ontario
Batavia					66.5	67.4	66.9					56.5	57.3	W			1.6	7.3	2.6	3.7	160	38	W/N	98	107	New York
Frankenmuth	66.8	61.9	98.1	58.0	64.4	64.7	64.5	62.3	71.3	69.4	68.9	58.4	58.0	W			3.5	8.7	6.1	5.7	164	40	B/N	100	100	MSU
Mean	71.3	67.3	103.3	62.0	67.4	70.6	69.0	66.2	75.5	73.8	73.4	55.3	56.9				2.7	4.7	3.6	4.0	161.6	38.8	99.6	100.6		
# of sites	7	7	7	5	7	6	13	18	25	32	39	7	6				2	1	1	5	1	2	6	6		
l.s.d.			8.2	5.3	7.7	5.2						0.8	0.9				2.1	1.6	1.5	1.6	1.3	3.2	composite	composite		
c.v.			6.9	6.9	11.1	6.4						1.5	1.5										(1994 grain)	(1994 grain)		

7/31/95
 Yield was calculated using the entire area of the plot including the wheel tracks between plots. Test weights were estimated using 1 pint samples for each harvested plot. Yield comparisons are only valid within a column. Disease abbreviations are: PM=powdery mildew, MSSV=wheat spindle streak mosaic virus, and LR=leaf rust. All scores are based on a 0-9 scale, where 0 is the best possible score. Data for 50% pollen shed indicate the number of days past January 1st before that variety reached the point where 1/2 of its heads were flowering. Plant height was measured at the tip of average heads in a plot. MSU makes no endorsement of any wheat variety or brand.



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