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Cooperative Extension Service
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Frankenmuth Wheat

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Frankenmuth is a new variety of soft white wheat, first available to growers in 1980. It is named for the town of Frankenmuth, located in the heart of Michigan's rich agricultural "thumb" area and the site of one of the early grist mills established in 1871.

History and Pedigree

This new variety is an F_5 selection from a 1967 cross of Norin 10/Brevor14//Yorkwin/3/2*Genesee, A3141/4/Genesee*3/Redcoat, A5115. Selections were made for Hessian fly resistance, leaf rust resistance,

and milling and baking quality. After each cross, selections with acceptable plant type and resistance were further tested for yield and quality performance at a number of locations. Only superior lines with high stable performance were used in subsequent crosses.

Yield Performance

Along with Augusta, another new variety, Frankenmuth is expected to establish a new standard for yield among Michigan wheat varieties. It has been tested in Michigan yield trials since 1973 and in the Eastern Uniform soft white winter wheat trials since 1976 (see Table 1 and Figure 1). In 42 nurseries over five years, it has outyielded Genesee by 14% and Arthur by 16%. During this period it has proved very responsive to nitrogen top dressing in the spring.

Disease and Insect Resistance

Frankenmuth combines good to excellent disease resistance with improved Hessian fly resistance. It has W38 Hessian fly resistance, protecting it from both Races A and C. Like Ionia and Genesee, it has moderate resistance or tolerance to powdery mildew. Although mildew is detected on the first leaves, it seldom spreads to the flag leaf or head. Even though it is not completely homozygous (genetically uniform) for rust reaction, Frankenmuth has some type 2 resistance (halo around pustule), slow rusting resistance, and a combination of the two.

Agronomic Description

Like most other soft white varieties, Frankenmuth has a bronze head color at maturity. Its average height

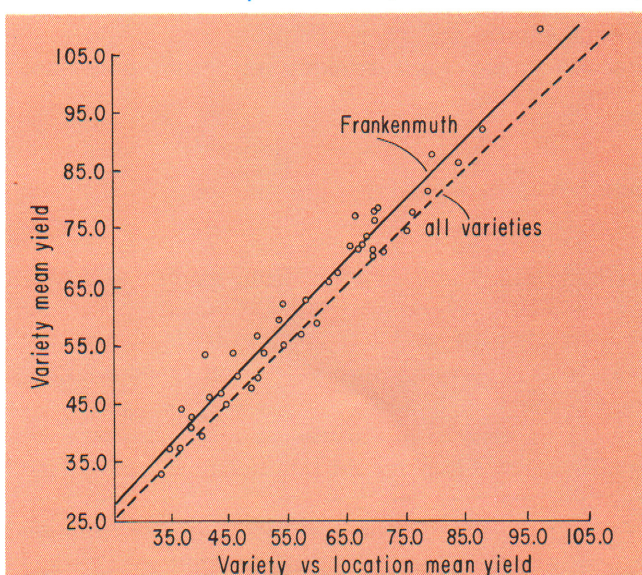


Figure 1. Yield of Frankenmuth compared to the mean yield of all wheat varieties in Michigan State University tests, 1973-1978.

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This variety was developed by the Dept. of Crop and Soil Sciences in cooperation with the Dept. of Botany and Plant Pathology and the U.S. Dept. of Agriculture Science and Education Administration, Agricultural Research.

WHEAT VARIETY PERFORMANCE — 1973-1978.

| Variety | Grain Color | Straw Height | Test Weight | Hessian Fly Resistance | Winter Hardiness | Lodging Resistance | Leaf Rust Resistance | Yield (Bu/A) |
|-------------|-------------|--------------|-------------|------------------------|------------------|--------------------|----------------------|--------------|
| Frankenmuth | white | 40 | 59.4 | Races A & C | good | very good | resistant | 61.5 |
| Augusta | white | 39 | 57.7 | none | good | very good | resistant | 61.4 |
| Tecumseh | white | 37 | 61.1 | Races A & C | very good | very good | resistant | 54.3 |
| Ionia | white | 42 | 59.7 | Race A | good | good | resistant | 55.7 |
| Genesee | white | 45 | 59.5 | none | good | good | susceptible | 53.5 |
| Yorkstar | white | 39 | 57.5 | none | good | very good | susceptible | 58.3 |
| Arthur | red | 36 | 60.5 | all known races | very good | very good | resistant | 52.4 |
| Abe | red | 34 | 60.4 | all known races | very good | very good | resistant | 52.7 |

Data from 42 locations in 6 years of Michigan State University testing throughout Southern Michigan.

is 40 inches, five inches shorter than Genesee and one inch taller than Yorkstar. It has superior straw strength which prevents lodging. In only four out of 42 nurseries has lodging been recorded, whereas lodging almost always occurs in Genesee. Frankenmuth is about equal in winterhardiness to Genesee and Ionia and superior to Yorkstar. It has good test weight, comparable to most available varieties and about 2 lbs. better than that of Yorkstar.

A comparison of plant type and agronomic description is shown in Table 1.

Fertility Management

Because of Frankenmuth's excellent response to nitrogen, it is recommended that 60-80 lbs. of actual N per acre be applied in early spring. Optimum application time is before the ground thaws in early spring (only on level fields) or during the first 2 or 3 weeks of spring growth.

Milling and Baking Quality

Extensive quality tests have been conducted by the Soft Wheat Laboratory of the North Central Region, Federal Research, USDA Science and Administration. Frankenmuth has been shown to meet the same high milling and baking quality standards for soft wheats as Yorkstar.

Plant Variety Protection

An application has been filed for Plant Variety Protection on Frankenmuth. Sale of seed by variety name is restricted to certified seed. Sale of uncertified seed

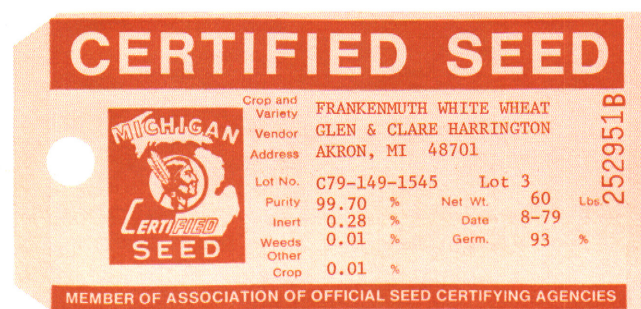


Figure 2. Certified seed tag for Frankenmuth wheat.

by variety name (Frankenmuth) will be in violation to provisions of the Federal Seed Act. Growers who buy certified seed may not legally sell the following generations as year-from-certified Frankenmuth. This provision is expected to better maintain varietal identity of Frankenmuth and help control serious seedborne diseases such as bunt (stinking smut) and loose smut.

Seed Availability

Certified seed is produced under rigid standards of varietal purity and freedom from seedborne diseases by members of the Michigan Crop Improvement Association. All seed lots are required to meet high standards of germination and freedom from other crop seeds, weed seeds and inert matter. Wheat growers should be assured of varietal identity and high seed quality by checking for the familiar blue certified seed tag before purchasing their seed.

Certified seed may be purchased directly from seed growers or from local elevators or other seed outlets.