Winter Wheat Production
Michigan State University
Cooperative Extension Service
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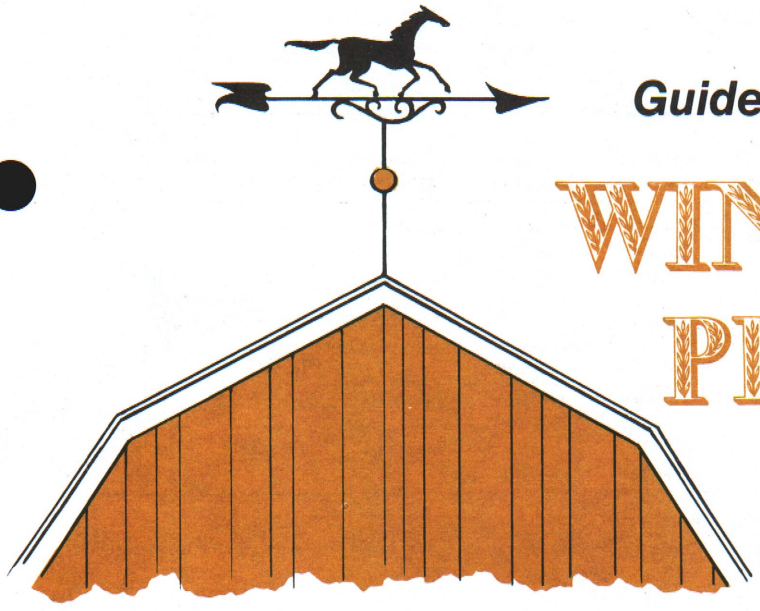

FARMING KNOW-HOW
Guidelines to Better Family Farming

WINTER WHEAT PRODUCTION

COOPERATIVE EXTENSION SERVICE
Michigan State University

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Livingston County
Extension Director

WINTER WHEAT has wide adaptation in Michigan. Wheat does best on well-drained sandy loam to clay loam soils.

Crop Rotation

Follow a crop rotation with at least two full years between wheat crops to avoid difficulties with root and stem rot disease of wheat. Do not plant wheat after wheat, rye, other fall-sown grains, quackgrass or bromegrass sods or legumegrass sods with lots of grass in them. Continuous cropping to wheat on the same field may result in a 10 to 15% or more reduction in yield for the second wheat crop and 50 to 80% reduction in the third crop because of a buildup of root and stem rot diseases. Plant wheat after soybeans, field beans, and land summer fallowed for weed control.

Types and Varieties

Michigan's climate is suited to produce soft white and soft red winter wheats which are used in the breakfastfood industry and in pastry flours for making cakes, cookies, crackers, etc. The current varieties best suited for Michigan are:

Tecumseh is a high-yielding, soft, white wheat variety which associates short plant height (36 inches) and high test weight. The short straw height gives it excellent lodging resistance. Tecumseh is resistant to Hessian fly, powdery mildew, leaf rust and wheat streak mosaic. It is the most winter hardy of all soft white wheat varieties available to Michigan growers.

Genesee has been a standard soft white wheat variety in Michigan for many years and has maintained an excellent yield and quality record. Genesee has a tall (43.8 inches) plant height and a strong white stem. It is midseason in maturity and is susceptible to Hessian fly.

Ionia is a soft, white winter wheat that is visually indistinguishable from Genesee but has moderately better straw strength and is an inch shorter (42.7 inches). It is resistant to leaf rust and shows moderate resistance to mildew. Ionia is also resistant to Hessian fly.

Yorkstar is a soft, white winter wheat that visually resembles Genesee except that it is 5 to 7 inches shorter at 38 to 39 inches, and is more lodging resistant. Although Yorkstar is susceptible to Hessian fly, mildew and leaf rust, it has achieved an excellent yield record in Michigan. Test weight is lower, but flour yield has been as high or higher than higher test weight varieties.

Arthur is a soft, red winter wheat that is especially well adapted to southern Michigan. At 35 to 36 inches in height it averages about 8 inches shorter than Genesee and Ionia. Arthur is resistant to both leaf and stem rust as well as Hessian fly. It also offers some resistance to loose smut and powdery mildew. Arthur has an outstanding yield performance in Michigan. Milling quality tests have shown that Arthur is a high-quality, soft, red wheat.

Abe is a soft, red wheat variety that has about the same straw height as Arthur with better lodging resistance and slightly better yields. Abe has good resistance to leaf rust, Hessian fly, powdery mildew and wheat streak mosaic.

Seed and Seed Treatment

High-quality seed is important to a high-quality commercial crop. In high-quality seed, look for: (1) 90% germination or higher; (2) varietal purety; (3) free from other crop seed like

Variety Comparison Chart *

Variety	Grain color	Chaff color	Height in Inches	Test Weight lb/bu	Hessian fly resistance	Winter hardiness	Lodging resistance	Leaf rust resistance	Yield (Bu/A)	Yield as a % of Genesee
Tecumseh	white	white	36	61.2	Races A and C	very good	very good	resistant	52.2	108
Ionia	white	red	43	59.1	Race A	good	good	resistant	50.0	107
Genesee	white	red	43	59.0	none	good	good	susceptible	46.8	100
Yorkstar	white	red	38	57.0	none	good	very good	susceptible	54.2	116
Arthur†	red	white	35	60.9	all known races	very good	very good	resistant	48.2	103
Abe†	red	white	35	60.5	all known races	very good	very good	resistant	49.9	107

* Mean of 18 locations, 1971-74.

† Arthur, Arthur 71, Oasis, Abe and Tecumseh have all shown some sensitivity to Banvel D and possibly low rates of Atrazine manifested in short, ragged stems, some floret sterility and slightly lower yield.

rye; and (4) free from weed seed, especially weeds like corn cockle, wild onion, chess. Certified seed consistently meets all of these requirements. Regardless of the seed planted, its germination or viability should be determined ahead of time in the laboratory before planting.

Seed should be treated to control bunt and loose smut. Bunt can cause severe economic loss to wheat growers by heavy discounts or complete loss of a market. Losses from loose smut are likely to be smaller, but may occur each year. Hexachlorobenzene (HCB) controls bunt but not loose smut; Vitavax 200, a more expensive treatment, controls both loose smut and bunt.

Seed Supplies

Certified seed supplies of all varieties discussed above are available from local elevators and certified seed growers.

Soil Preparation

Plowing is usually necessary in preparing a seed bed for wheat except where the crop follows field beans, soybeans, corn for silage or other row crops. When wheat follows a grain crop, such as oats, plow the field as soon as possible after harvest of that crop. After plowing, disk and drag just before planting to smooth the soil and control weeds. Secondary tillage to control weeds is usually necessary if the field is plowed early. Excessive preparation will pack the soil unduly and should be avoided.

Planting

Tests conducted over a period of years at East Lansing show the best planting rate for wheat is 6 to 8 pecks (1.5 to 2 bushels) per acre of high-quality seed. A yield decrease occurred when the rate was less than 6 pecks or more than 8 pecks per acre.

On fine-textured soils (loam, silt loam and clay loam) a planting depth of 1.5 inches is most desirable; on lighter soils a 2-inch depth is preferred. A slightly greater depth would be advisable when the soil is dry.

Wheat should be planted (1) early enough to obtain a good stand of well-developed plants before winter begins, and (2) late enough to miss the fall brood of the Hessian fly and infection with virus diseases. Recent testing showed that wheat planted 10 days to 2 weeks after the fly-free date had the highest yields.

Wheat seed will sprout at about 35 to 40 degrees Fahrenheit, so seed will germinate if planted in November. However, with such a late planting date, the plants may be too poorly developed to withstand winter injury.

Data have been accumulated over a period of years to arrive at average Hessian fly-free dates for the Lower Peninsula of Michigan. See your county Extension agricultural agent for the dates in your area.

Fertilization

Wheat responds well to fertilizer. Rate and analysis is best based on a soil test. Do not drill in direct contact with the seed more than a total of 100 pounds per acre of plant nutrients (N + P205 + K20) for sandy soils and 140 pounds for fine-textured soils. In many situations, wheat will give a good yield response to 30-40 pounds per acre of actual nitrogen top-dressed in early spring.

Additional References

Ext. Bull. 434, Chemical Weed Control in Field Crops
Ext. Bull. 489, Seeding Practices for Michigan
Ext. Bull. 550, Fertilizer Recommendations for Vegetable and Field Crops
Ext. Bull. 808, Wheat Spindle Streak Mosaic
Ext. Bull. 826, Loose Smut of Wheat, Spelt and Barley
Ext. Bull. 845, Root Rots and Other Diseases of Wheat

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