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## WHEELER RYE-- for Forage and Green Manure



# WHEELER RYE-- for Forage and Green Manure

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**COVER: Wheeler is leafier and produces more green matter than most commonly grown ryes.**

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*by L. O. Copeland and F. C. Elliott<sup>1</sup>*

## INTRODUCTION

Wheeler, released by the Michigan Agricultural Experiment Station in 1971, is a tetraploid forage rye variety. It has the potential for producing high yields of forage for use as silage, pasture or as a green manure crop. The variety was named Wheeler after Professor E. J. Wheeler, who fostered the rye green manure program in potato rotations.

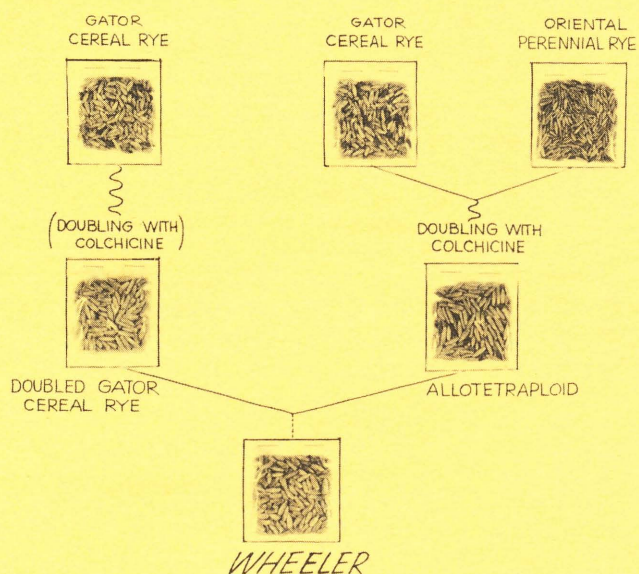
## PEDIGREE

Wheeler was developed by Dr. Fred C. Elliott, Michigan State University plant breeder (Fig. 1). It is a cross between Gator cereal rye from Florida and a perennial oriental rye (Fig. 2). The hybrid seeds resulting from this cross were treated with colchicine to double the chromosome complement. The one plant obtained was back-crossed with a Gator plant, similarly doubled with colchicine. The plant population resulting from these crosses was isolated and open-pollinated for several generations. During this time, it was screened for fertility and seed yields.



**Fig. 1. Dr. Fred C. Elliott, Michigan State University plant breeder and developer of Wheeler rye.**

<sup>1</sup>Extension Seed Specialist and Professor of Crop Science, Department of Crop and Soil Sciences, respectively.



**Fig. 2. Origin of Wheeler rye illustrating cross between Gator cereal rye and a perennial oriental rye.**

### PERFORMANCE AND ADAPTABILITY

Wheeler is a leafy, vigorous growing rye adapted to the lower Great Lakes Region. It matures 1 to 2 weeks later than Balbo (Fig. 3), is leafier, and has produced 14% more forage in four years of testing at East Lansing and Lake City (Table 1).

Feeding trials by Michigan State University dairy scientists show that heifers gained as well on Wheeler rye silage as on alfalfa haylage. Efficiency of gain was higher on Wheeler, although animal intake was lower than for alfalfa. Trials with lactating cows showed equal

production on rye silage, alfalfa haylage, or on a combination of the two. Digestibility studies with sheep showed that rye had higher total digestible nutrients (TDN) than alfalfa haylage.

While its chief use is in forage production, Wheeler will produce high yields of grain. In seven years of tests at East Lansing, grain yields have been 95% of those for Genesee wheat.

**Table 1. Forage yields of Wheeler Rye (Tons per acre at 12% moisture, harvested in late May - early June).**

Year	Balbo	Wheeler
<b>East Lansing</b>		
1964	2.77	3.51
1965	1.82	2.36
1968	2.56	2.45
Average	2.38	2.77
<b>Lake City</b>		
1964	2.84	3.17
1965	3.00	3.59
1968	1.46	1.73
1969 (a)	1.63	1.71
1969 (b)	1.44	1.54
Average	2.07	2.35
<b>Average, 8 tests [1964-1969]</b>	<b>2.19</b>	<b>2.51</b>

(a) Planted Oct. 5, 1968, after sorghum sundangrass disked twice.

(b) Planted Aug. 1, 1968; one fall and two spring cuttings.



**Fig. 3. Wheeler (right) matures about 1 to 2 weeks later than Balbo rye (left).**

### VARIETAL PROTECTION

Wheeler is protected under the U.S. Plant Protection Act of 1970. Under this act, the varietal name "Wheeler" is limited to certified seed use.<sup>2</sup> It is a violation of the Federal Seed Act to sell uncertified rye seed under the name of Wheeler. This assures seed buyers of the proper variety and should insure long-term genetic stability for Wheeler.

<sup>2</sup>Certified seed will be available for Fall 1972.



## Research Units of the Michigan Agricultural Experiment Station

- ① Upper Peninsula Experiment Station, Chatham. Established 1907. Beef, dairy, soils and crops. In addition to the station proper, there is the Jim Wells Forest.
- ② Dunbar Forest Experiment Station, Sault Ste. Marie. Established 1925, forest management.
- ③ Lake City Experiment Station, Lake City. Established 1928. Breeding, feeding and management of beef cattle; and fish pond production studies.
- ④ Graham Horticultural Experiment Station, Grand Rapids. Established 1919. Varieties, orchard soil management, spray methods.
- ★ Michigan Agricultural Experiment Station, Headquarters, 101 Agriculture Hall, MSU, East Lansing. Established 1888. Research work in all phases of Michigan agriculture and related fields.
- ⑥ Muck Experimental Farm, Laingsburg. Plots established 1941, crop production practices on organic soils.
- ⑦ South Haven Experiment Station, South Haven. Established 1890. Breeding peaches, blueberries, apricots. Small fruit management.
- ⑧ W. K. Kellogg Farm and Bird Sanctuary, Hickory Corners, and W. K. Kellogg Forest, Augusta. Established 1928. Forest management, wildlife studies, mink and dairy nutrition.
- ⑨ Fred Russ Forest, Cassopolis. Established 1942. Hardwood forest management.
- ⑩ Ferden Farm, Chesaning. Plots established 1928. Soil management, with special emphasis on sugar beets. (Land Leased)
- ⑪ Montcalm Experimental Farm, Entrican. Established 1966. Research on crops for processing, with special emphasis on potatoes. (Land Leased)
- ⑫ Sodus Horticultural Experiment Station, Sodus. Established 1954. Production of small fruit and vegetable crops. (Land Leased)
- ⑬ Trevor Nichols Experimental Farm, Fennville. Established 1967. Studies related to fruit crop production with emphasis on pesticides research.
- ⑭ Saginaw Valley Beet and Bean Research Farm, Saginaw. Established 1971. Studies related to production of sugar beets and dry edible beans in rotation programs.