

RULER SOFT RED WINTER WHEAT

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Ruler soft red winter wheat is a high yielding variety which was officially released in 1975. The release of Ruler represents a large step forward in the development of varieties specifically bred for adaptation to Ohio and surrounding areas. Ruler, previously reported under the designation TN 1542, has been tested in Ohio yield trials since 1969 and throughout the Midwest since 1971. The overall performance of Ruler is compared with Arthur, Arthur 71, and Logan in Table 1. A Plant Variety Protection Certificate has been issued for Ruler with provision that seed be sold only as a class of Certified seed and must be labeled as a protected variety. No royalty will be charged.

Origin

Ruler originated in Ohio from the cross Purdue L494A1-8-5-5 X Lucas. Purdue L494A1-8-5-5 was selected from the cross Norin 10-3 X R4746A6. R4746A6 originated from a complex cross (Kawvale-Fultz-Hungarian-W38-Wabash-Fairfield-Trumbull³-Hope-Hussar) X Knox sib. Ruler traces back to a single head selection made in the F₆ generation. Further purification of the line was made by bulking the progeny of 208 head selections made in 1967, 1970, and 1972.

Significant contributions to the development of Ruler were made by the USDA Soft Wheat Quality Laboratory, Wooster, Ohio, which con-

TABLE 1.—Comparative Performance of Arthur, Arthur 71, Logan, and Ruler in Ohio Drilled Plot Trials.

Variety	Yield* (bu./A.)	Test Weight† (lb./bu.)	Heading Date‡	Plant Height** (inches)	Straw Strength††	Winter Survival** (%)
Arthur	52.2	59.9	5-25	36	2.0	94
Arthur 71‡‡	49.3	59.8	5-25	36	2.3	95
Logan	56.5	59.4	5-31	41	1.9	97
Ruler	56.8	59.8	5-30	37	1.7	96

*Average of 53 location-years, 1969-1975.

†Average of 39 location-years, 1971-1975.

‡Average of 37 location-years, 1969-1975.

**Average of 42 location-years, 1969-1975.

††Average of 41 location-years, 1969-1975 (1 = erect to 9 = completely lodged)

‡‡Not available in 1969 or 1970. Data adjusted on the basis of relative performance in remaining years.

TABLE 2.—Comparative Yields (bu./A.) of Arthur, Arthur 71, Logan, and Ruler in Ohio Drilled Plot Trials, by Locations.

Variety	OARDC Wayne County 1969-75	OSU Franklin County 1970, 71, 73, 75	Mahoning County Exp. Farm 1969-75	Western Branch Clark County 1969-75	North- western Branch Wood County 1969-75	South- eastern Branch Meigs County 1970-72	Southern Branch Brown County 1969, 71, 73-75	OFS Licking County 1970-75	North Central Branch Erie County 1970-75	Av. (53 Loc.- Years)
Arthur	49.1	45.4	43.9	57.2	68.7	48.2	40.8	45.6	64.7	52.2
Arthur 71*	45.4	45.5	42.0	56.5	63.4	42.2	39.4	44.4	58.7	49.3
Logan	52.9	52.1	49.1	65.1	68.9	60.4	44.3	51.8	63.1	56.5
Ruler	52.3	53.6	50.4	59.8	71.8	60.6	43.8	50.8	67.3	56.8

*Not available in 1969 or 1970. Yields adjusted on the basis of relative performance in remaining years.

TABLE 3.—Comparative Yields (bu./A.) of Arthur, Arthur 71, Logan, and Ruler in Ohio Drilled Plot Trials, by Years.

Variety	1969 5 Loc.	1970 9 Loc.	1971 9 Loc.	1972 7 Loc.	1973 8 Loc.	1974 7 Loc.	1975 8 Loc.	Av. (53 Loc.-Yrs.)
Arthur	53.9	51.8	57.3	60.5	33.7	55.1	54.4	52.2
Arthur 71*	—	—	50.0	56.8	34.1	55.1	52.8	49.3
Logan	57.3	54.1	61.7	62.1	44.8	60.9	56.1	56.5
Ruler	53.3	51.0	60.8	67.3	41.4	67.2	57.8	56.8

*Not available in 1969 or 1970. Mean yield calculated on basis of relative performance in remaining years.

ducted quality determinations; the Agricultural Research Service, U. S. Dept. of Agriculture, Lafayette, Ind., which conducted Hessian fly resistance determinations; and Dr. C. A. Lamb, Professor Emeritus of Agronomy, OARDC, who made the original cross.

Performance

Ruler was first entered in statewide drilled plot yield trials in Ohio in 1969 at five locations and has been tested in seven or more locations each succeeding year for a total of 53 tests through 1975. It has produced consistently high yields compared to other varieties in the trials at all locations (Table 2) and during most years (Table 3), ranking first or second in yield compared to all recommended varieties in 31 of 53 tests.

Ruler has also been tested since 1971 in the Eastern Uniform Soft Wheat Nursery which is grown in several states in the eastern United States. Ruler performed well in this nursery which is composed of new varieties and the most promising experimental lines developed by wheat breeding personnel in the several states involved. In these tests, Ruler ranked 9th among 28 entries at 17 locations in 1971, 13th among 30 entries at 14 locations in 1972, 9th among 22 entries at 13 locations in 1973, 10th among 23 entries at 15 locations in 1974, and 11th among 23 entries at 13 locations in 1975.

Test weight of Ruler is classed as high. It is equal to that of Arthur, Arthur 71, Abe, and Oasis in most tests and above that of Logan.

Straw strength of Ruler is superior to that of Arthur, Arthur 71, Abe, Logan, and Oasis.

Winter hardiness of Ruler under Ohio conditions is excellent and exceeds all soft wheat varieties currently grown in Ohio except Logan, to which it is approximately equal.

Characteristics

Ruler is very short in height, averaging about 1 inch taller than Arthur, Arthur 71, Abe, and Oasis and about 4 inches shorter than Logan.

Ruler averages 1 day earlier in heading date than Logan and about 5 days later than Arthur, Arthur 71, Abe, and Oasis.

Ruler is moderately tolerant to acid soil conditions. It is about equal to Logan in this respect and distinctly superior to Arthur, Arthur 71, Abe, and Oasis.

Ruler heads are fusiform, mid-dense, with yellow anthers, and are semi-erect at maturity. Awnlets are present, with top awnlets 1-2 cm. in length. Glumes are round-shouldered with an acute beak, midlong, and wide. Kernels are ovate, with a short, non-collared brush and

rounded cheek. Phenol reaction is brown. Coleoptile color is generally white. Foliage color is green. Straw color is yellow and chaff color is white. Tillering ability is very good.

Insect and Disease Resistance

Ruler is very resistant to soil-borne spindle streak mosaic virus, and is resistant to loose smut. It is moderately susceptible to powdery mildew and most races of leaf rust and stem rust, but has not exhibited significant yield reductions from these diseases in Ohio. Ruler has shown moderate tolerance to barley yellow dwarf virus and is resistant to the Great Plains, A, C, and F races of Hessian fly.

Milling and Baking Qualities

Ruler has excellent soft wheat milling and baking characteristics, yielding finer granulation and slightly lower protein flour upon milling than most currently grown soft red winter wheat varieties.

Availability

Foundation generation seed of Ruler was distributed to growers of Registered seed in the fall of 1975. Thus limited quantities of seed may be available to producers in 1976. Certified generation seed should be widely available for planting in the fall of 1977.