

TITAN SOFT RED WINTER WHEAT

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Titan soft red winter wheat is a high yielding variety which was officially released by the Ohio Agricultural Research and Development Center in 1978. With the advent of Titan, it is expected that yields of wheat in Ohio should advance several bushels per acre due to its extremely high yield potential. Titan has been previously designated as TN 1640 in the results of tests reported in OARDC Agronomy Department Series No. 203 since 1972. The overall performance of Titan is compared to Ruler, Logan, Abe, and Arthur, four of the currently predominant varieties grown in Ohio, in Table 1. A Plant Variety Protection Certificate (No. 7800087) has been granted for Titan with the provision that seed of Titan be sold or offered for sale only as a class of Certified seed and must be labeled as a protected variety. Farmers, however, may save their own seed for reseeding purposes on their own farms. No royalties will be charged on Titan.

Origin

Titan originated from a cross of two experimental Ohio lines which were never released as varieties. The cross was TN 1434 x 1057F₄-33. TN 1434 originated from the cross Lucas x (Lucas x C. I. 12530), while 1057F₄-33 originated from the cross (Norin 10 x Brevor 2009) x Lucas. Titan traces back to a single head selection made in 1966 in an F₃ bulk from this cross. Further purification of Titan was made by selecting 25

TABLE 1.—Comparative Performance of Titan and Other Varieties in Ohio Drilled Plot Trials, 1972-1978.

Variety	Yield*	Test Weight*	Heading Date†	Plant Height‡	Percent Lodging*	Percent Winter Survival**
	bu/A††	lb/bu		inches		
Titan	59.8	57.7	5-29	37	5	97
Ruler	55.0	59.1	5-29	36	7	96
Logan	53.5	59.1	5-29	39	5	97
Abe	50.2	59.0	5-23	32	6	94
Arthur	49.9	59.3	5-23	33	6	96

*Average of 47 tests, 1972-1978.

†Average of 40 tests, 1972-1978.

‡Average of 45 tests, 1972-1978.

**Average of 35 tests, 1972-1978.

††Yield in lb/A at 13.5% moisture \div 60 = bu/A.

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TABLE 2.—Comparative Yields of Titan and Other Varieties, by Locations, in Ohio Drilled Plot Trials, 1972-1978.

Variety	OARDC, Wooster 1972-78	Northwestern Branch, Custar 1973-78	Western Branch, S. Charleston 1973-78	Mahoning Co. Farm, Canfield 1973-78	North Central Branch, Green Springs 1973-78	OSU, Columbus 1973, 1975-78	OFS, Croton 1973-77	Southern Branch, Ripley 1973-78	Average 47 Location- Years
Titan	62.7	64.2	63.9	46.9	68.8	62.6	57.1	51.6	59.8
Ruler	56.4	60.4	59.2	45.1	62.2	58.8	54.8	43.5	55.0
Logan	54.4	60.8	62.6	40.9	59.3	55.4	51.1	43.6	53.5
Abe	47.9	60.4	59.6	36.8	61.0	50.5	45.0	39.6	50.2
Arthur	50.4	60.9	59.5	37.4	59.5	46.8	43.5	39.5	49.9

TABLE 3.—Comparative Yields of Titan and Other Varieties, by Years, in Ohio Drilled Plot Trials, 1972-1978.

Variety	1972 1 Location	1973 8 Locations	1974 7 Locations	1975 8 Locations	1976 8 Locations	1977 8 Locations	1978 7 Locations	Average 47 Locations
Titan	75.7	44.4	69.6	62.9	54.6	63.5	63.7	59.8
Ruler	69.8	41.4	67.2	57.8	47.7	61.2	54.3	55.0
Logan	60.9	44.8	60.9	56.1	48.9	55.5	55.3	53.5
Abe	72.6	34.9	55.2	56.1	42.8	57.0	53.5	50.2
Arthur	68.5	33.7	55.1	54.4	45.2	53.6	56.3	49.9
Arthur 71	65.0	34.1	55.1	52.8	41.1	55.1		
Oasis			56.2	52.1	45.0	54.1		

identical appearing single heads in the F_{11} generation in 1974 and examining the progeny of these individual heads in 1975, 1976, and 1977. Breeder seed was composed of a bulk of the progeny of 14 of these 25 original head selections judged to be uniform. Breeder seed was used to seed approximately 60 acres in 1977 by Ohio Foundation Seeds, Inc. Foundation generation seed was distributed to growers of Registered Class seed in the fall of 1978, the year of official release of Titan.

Performance

Titan has been tested in drill-plot trials at Wooster since 1972 and in statewide Ohio drill-plot trials since 1973. Tests including Titan have been conducted at seven or eight locations each year beginning in 1973 for a total of 47 tests through 1978. Titan has consistently produced higher yields than all major varieties grown in Ohio in trials at all locations as shown in Table 2 and in all years except 1973 as shown in Table 3. Titan ranked first in yield compared to all major varieties grown in Ohio in 34 of the 47 individual tests. It is anticipated that the dramatically higher yield potential of Titan compared especially to the Arthur-type varieties (Arthur, Arthur 71, Abe, Oasis, and Beau) should result in considerable displacement of acreages of the Arthur-type varieties as well as some displacement of Logan and Ruler in favor of Titan. Only where double cropping is planned or a distribution of labor at harvest is desired is it logical to continue production of the earlier, lower yielding Arthur-type varieties.

Straw strength of Titan has been as good as or better than that of all other major varieties in Ohio, even under high nitrogen fertility.

Winter survival of Titan has been excellent, equaling Logan and Ruler and exceeding the Arthur-type varieties under severe winterkill conditions.

Characteristics

Titan has averaged the same date of heading as Logan and Ruler in Ohio trials and this date is about 6 days later than the Arthur-type varieties. While actual dates of heading vary from year to year and location to location, the relative ranking of varieties for date of heading rarely changes. Ranges in date of heading differences between varieties also vary with season and location, with warmer temperatures and more northern locations generally reducing this range. In years or locations where Logan, Ruler, and Titan have not headed at the same time, Ruler has usually been earliest, followed by Titan, then Logan. Date of combine ripe is usually highly correlated with date of heading, but the range in days from earliest to latest varieties is usually reduced compared to heading dates.

Plant height of Titan is normally between that of Ruler and Logan, averaging 3-4 inches taller than most Arthur-type varieties.

Titan is classed as medium in test weight, being 1 to 1½ lb lighter than the other major varieties currently in production in Ohio. This lower test weight may result in a 1-2¢ per bushel discount compared to other varieties, a minor reduction in crop value when compared to the increased yield potential of Titan.

Titan is moderately tolerant to acid-soil conditions, being about equal to Logan and Ruler and distinctly superior to the Arthur-type varieties, which should not be grown where topsoil or subsoil pH's are below 5.3 to 5.6.

Titan is beardless, has dark green foliage, maintains a prostrate growth habit later in the spring than most varieties, has large heads, and at maturity has white chaff and yellow straw color. Titan has a high tillering capacity.

Titan heads are tapering, apically awnletted, mid-dense to dense, and slightly nodding at maturity. Coleoptile color is normally white with no seedling anthocyanin. Kernels average 35 grams per 1,000. Phenol reaction is black.

Insect and Disease Resistance

Titan is resistant to races A and C of Hessian fly as determined in tests by SEA-USDA, Lafayette, Indiana. Race A is one of the two most prevalent races in Ohio. Titan is also resistant to loose smut under both natural and artificial infection conditions. It has shown moderate field resistance to powdery mildew and leaf rust. It is tolerant to wheat spindle streak mosaic virus and resistant to soil-borne mosaic virus. No data on barley yellow dwarf virus reaction are available.

Milling and Baking Qualities

Protein content of Titan has been somewhat lower than Arthur and Abe and slightly lower than Logan, a trait which may make it very desirable for milling and baking since protein content of most soft wheat varieties has been higher in recent years than desired in commerce. Other milling and baking characteristics are also satisfactory, as determined by the USDA Soft Wheat Quality Laboratory, Wooster, Ohio, being about equal to Logan and in some properties superior to the Arthur-type varieties.

Availability

Limited quantities of seed of Titan should be available to commercial growers in 1979 and seed of the Certified generation should be widely available for seeding in the fall of 1980. Breeder seed is being maintained by the Ohio Agricultural Research and Development Center, Wooster, Ohio 44691. Titan has been accessioned as C. I. 17762 in the SEA-USDA wheat collection.