

ADENA SOFT RED WINTER WHEAT

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Ohio Agricultural Research and Development Center
Wooster, Ohio

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ADENA SOFT RED WINTER WHEAT

H. N. LAFEVER¹

Adena wheat is a new, high yielding, soft red winter variety officially released by The Ohio State University, Ohio Agricultural Research and Development Center, in 1984. Seed will be available to Ohio farmers for use in seeding in the fall of 1985. Performance of Adena in drill plot tests in Ohio is compared to several current varieties of interest in Tables 1-3. Adena was previously designated as OH 188 in results of tests reported in OARDC Agronomy Department Series No. 203 from 1978 to 1982.

Application has been made for Plant Variety Protection for Adena with the provision that seed be sold or offered for sale only as a class of certified seed and that it be labeled as a protected variety. Farmers, however, are permitted to save their own seed for reseeding purposes on their own farms. This variety will be multiplied on what is known as a two-generation system; that is, only foundation and certified classes will be produced beyond breeder seed.

Origin

Adena originated from the cross [(S227 x Logan)-F₂ x Blueboy] x Logan. S227 is an unreleased sister line of an Indian spring wheat variety, Kalyan Sona. The Blueboy and Logan parents are two soft red winter wheat varieties still being grown in the eastern U. S. The final cross was made in 1970 and was designated "2370". Adena was first selected as an individual plant in the F₂ generation and reselected as a single plant in the F₃ generation before final selection in the F₇ generation. The pedigree 2370B2-10-2 was used to designate this line in early tests until it was given the shorter, advanced line designation "OH 188" in 1977. Breeder seed of Adena consists of a bulk of the progeny of 23 uniform, F₇ plants which were maintained separately in the F₈ through F₁₂ generations before they were bulked at harvest in 1982. After one more year of increase in 1982-83, breeder seed was used to seed approximately 100 acres in the fall of 1983 for foundation generation seed production by Ohio Foundation Seeds, Inc. Foundation generation seed was first distributed to growers of certified seed in the fall of 1984, the year of official release.

Agronomic Performance

Adena was first tested in a replicated micro plot yield trial in 1976 at Wooster and first entered in the state-wide drill plot yield trials in 1978. Performance tests including Adena have been conducted at six

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TABLE 1.—Comparative Yields (bu/A) of Adena and Other Wheat Varieties, by Years, in Ohio Drilled Plot Trials, 1978-1984.

Variety	1978 3 Tests	1979 6 Tests	1980 7 Tests	1981 7 Tests	1982 7 Tests	1983 7 Tests	1984 6 Tests	Average	
								30 Tests	43 Tests
Abe	57	49	52	43	54			50	
Arthur	62	50	50	42	58			51	
Caldwell					59				
Hart	63	56	60	52	63	58	55	58	58
Logan	57	51	55	44	59			53	
Roland	67	54	55	47	59			54	
Ruler	53	54	56	44	56			52	
S-76	63	56	64	50	63			59	
Titan	62	59	62	48	61	60	51	58	57
Adena	56	62	60	47	59	58	58	57	57

TABLE 2.—Comparative Yields (bu/A) of Adena and Other Wheat Varieties, by Locations, in Ohio Drilled Plot Trials, 1978-1982.*

Variety	OARDC, Wooster 1978-82	Northwestern Branch, Custar 1978-82	Western Branch, S. Charleston 1978-82	Mahoning Co. Farm, Canfield 1979-82	Southern Branch, Ripley 1979-82	OFS, Croton 1979-82	Vegetable Crops Branch, Fremont 1980-82	Average 30 Location- Years
Abe	50	65	57	42	48	35	55	50
Arthur	51	65	58	42	44	37	59	51
Hart	60	72	61	52	53	43	62	58
Logan	54	66	58	46	44	43	54	53
Roland	55	71	58	49	47	37	60	54
Ruler	51	64	55	51	46	43	52	52
S-76	61	71	63	53	47	44	68	59
Titan	61	72	60	54	52	44	60	58
Adena	60	71	57	51	47	47	59	57

*No 1983 or 1984 data included in this table since all varieties were dropped from tests except Hart, Titan, and Adena after 1982 season.

TABLE 3.—Comparative Performances of Adena and Other Varieties in Ohio Drilled Plot Trials, 1978-84.

Variety	Percent Winter Survival		Plant Height (in.)		Date Headed (May)		Percent Lodging		Test Weight (lb/bu)	
	30 Tests	43 Tests	30 Tests	43 Tests	30 Tests	43 Tests	30 Tests	43 Tests	30 Tests	43 Tests
	Abe	96		34		25		11		58.2
Arthur	97		36		24		14		58.2	
Hart	97	96	36	37	26	28	4	4	57.6	57.8
Logan	97		42		30		8		58.2	
Roland	96		34		26		4		56.7	
Ruler	97		38		29		7		58.0	
S-76	98		36		27		2		58.1	
Titan	97	94	39	39	30	6/1	9	10	56.3	56.7
Adena	97	97	33	33	26	28	6	6	56.6	56.9

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to seven locations each year since 1978. Adena has outyielded the currently grown, older varieties Abe, Arthur, Logan, Roland, and Ruler by 3 to 7 bushels per acre in 30 such tests conducted over a 5-year period. In comparisons with the newer varieties Caldwell, Hart, S-76, and Titan, Adena appears essentially equal in yield. It is anticipated that Adena will replace several of the older varieties still being grown and may also replace Titan and Hart to a limited extent due to some agronomic and disease superiorities.

Adena has excellent winter hardiness, equalling or exceeding all other currently grown varieties in this trait.

Straw strength of Adena has been excellent, exceeding all currently grown varieties except Hart, S-76, and Roland which it approximately equals.

Characteristics

Adena heads 1 to 2 days later than Arthur and Abe on average, about the same day as Hart and Roland, and usually 3 to 4 days earlier than Titan, Logan, and Ruler. While actual dates of heading vary with years and locations within the state, the relative ranking of varieties for date of heading rarely changes. Ranges in date of heading differences between varieties are compressed into fewer days from earliest to latest heading varieties in more northern latitudes and in warmer seasons. Date of combine ripeness is usually highly correlated with date of heading, but the range in days from earliest to latest maturing varieties is reduced compared to heading dates.

Plant height of Adena is the shortest of all currently grown varieties in Ohio except Magnum, a private variety. Height has averaged 33 inches over all Ohio drill plot tests, 1 inch shorter than Abe and Roland and 3 to 9 inches shorter than other currently grown varieties.

Test weight of Adena is classed as medium, averaging 0.2 to 0.3 lb/bu heavier than Titan and 0.1 lb/bu below Roland.

Adena is moderately sensitive to acid soil conditions, being about equal to Hart, Arthur, and Abe and much less tolerant than Titan, Logan, and Ruler.

Adena is beardless, with medium length apical awns, has dark green foliage, usually begins regrowth earlier in the spring than most varieties, and attains an upright growth habit rapidly. At maturity Adena heads are tapering, mid-dense, mostly erect, with white chaff. Straw color is yellow.

Insect and Disease Resistance

Adena has only fair resistance to leaf rust and powdery mildew in Ohio evaluations, but is superior to S-76 and Hart in resistance to these

two diseases. It possesses excellent resistance or tolerance to wheat spindle streak mosaic virus, normally the most important wheat disease in Ohio. It also has exhibited excellent scab resistance and resistance to loose smut. Field observations in 1983 indicate Adena is moderately susceptible to barley yellow dwarf virus. Reactions of Adena to other minor diseases have not been adequately evaluated to report.

Adena possesses the H_7 and H_8 genes for Hessian fly resistance. These genes offer little protection against current races of Hessian fly found in Ohio; thus seedings of Adena should be made only after the fly safe date.

Milling and Baking Qualities

In several years of quality evaluations of samples submitted to the USDA Soft Wheat Quality Laboratory, Adena has proven to have excellent overall quality with most samples exceeding all currently grown varieties in performance. Only occasional samples have been exceeded in overall quality by two varieties, Roland and Caldwell. Adena appears to have exceptionally high milling quality as well as very high baking quality—a very desirable combination of quality traits.

Availability

First seed availability to the public will be for fall, 1985 seedings. However, seed supplies may be limited as only 4500 bushels were available in 1984 for seeding of certified production fields. Breeder seed will be maintained by the Ohio Agricultural Research and Development Center, The Ohio State University, Wooster, OH, 44691. Adena has been accessioned as P. I. 481852 in the USDA wheat collection.