

Siskiyou— a triticale variety for northern California

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Siskiyou is the first public variety of triticale to be released in the United States. It was released by the University of California on the basis of its consistently good performance, compared with wheat or barley in northern California. It was developed in cooperation with the International Maize and Wheat Improvement Center (CIMMYT) in Mexico for use as a feed grain for livestock and for human food as products and markets develop for the milled grain. Siskiyou takes its name from the northern California county where it is best adapted.

Origin and description

Siskiyou was selected from the CIMMYT triticale population T-903 (F₂-Masa-101Y), received in 1969. Head rows were selected for four generations at Davis and for two generations at Tulelake. The variety is a hexaploid, having 42 chromosomes, with spring growth habit. In performance tests Siskiyou was designated UC 8825 and is included in the U.S. Department of Agriculture World Collection as CI 17603. Siskiyou is highly self-pollinating and shows very low outcrossing when grown near other triticales.

This variety has long, somewhat lax spikes with white glumes (fig. 1). The awns are short and purple to black before maturity. The culm below the spike is pubescent, a trait obtained from rye. Its maturity is midseason to late, similar to Anza wheat. Siskiyou is considerably taller than currently grown wheat varieties, but it resists lodging quite well.

The grains of Siskiyou are large, soft,



Fig. 1. Spike of Siskiyou triticale.



Fig. 2. Grain samples comparing Anza wheat (left) with Siskiyou.



Fig. 3. Field planting—first seed increase of Siskiyou at Tulelake in 1976. Yield of this field was 6705 pounds per acre.

light red, and somewhat wrinkled. The germ (embryo) end of the grain is pointed, a trait typical of durum wheat (fig. 2). Siskiyou has high spikelet fertility, but is not as fertile as some other triticales that yield less than Siskiyou. The plant is slightly shorter than most triticale varieties.

Performance

Siskiyou was first tested for grain yield at Tulelake in 1973. Production was outstanding and remained high through two subsequent years. Three-year mean comparisons from replicated trials (see table 1) show yield was 17 percent higher than the closest triticale, 19 percent higher than Anza wheat, and 10 percent higher than Wocus barley. Table 2 gives results from additional tests at Tulelake in 1974 and 1975 where other common and durum wheats were grown. Siskiyou compared favorably with varieties currently grown in that region, although its advantage over Portola, the highest yielding wheat, was only 2.5 percent. Its yield was 28 percent higher than 6TA-204 triticale, a privately developed variety which has performed well at Tulelake for several years.

Generally, triticales for grain production have not performed favorably in the Sacramento, San Joaquin, and Imperial valleys; Siskiyou is no exception (see table 3). Siskiyou yielded only 74 percent as much as the wheat varieties in Central Valley tests. Similar results have been obtained in the Imperial Valley. The reasons for this relatively poor performance are not clear, but high temperatures and moisture stress during grain development may be significant in limiting yields. Siskiyou has not been evaluated in the coastal valleys.

Uses of triticale

Triticale has been high in grain protein content in previous comparisons. Siskiyou maintained a protein advantage over Anza wheat at Tulelake where yields were extremely high (tables 1 and 3). The amino acid lysine is deficient in wheat and barley grain, whereas most triticales have higher lysine content. Siskiyou has 23 percent more lysine in the grain and 14 percent more lysine as percent of the total protein than Anza. Therefore Siskiyou could be used advantageously for animal feed, especially for swine and poultry where lysine is a required nutrient. Higher protein content over other cereal grains could also be advantageous for cattle, even though cereals are mainly used for their high energy value.

Triticale cannot be substituted for wheat flour in commercial bread making operations, but is being blended success-

fully with wheat flour in specialty breads. Siskiyou could be used for this purpose; however, we believe that the main use of Siskiyou triticale will be as a feed grain. It is most advantageous to growers located in areas where it performs as well as or better than other cereal grains.

Siskiyou has not been evaluated as a forage. However, its tall and vigorous growth should produce a high tonnage of green chop, silage, or hay (see fig. 3), although it might not be as desirable as oats because of its thick culms. Trials are needed to compare blends of Siskiyou and other triticales with oats or other cereals for forage.

Seed stocks will be available in limited

quantities for growers in 1978. Foundation seed stocks are maintained by the Foundation Seed and Plant Materials Service and the Department of Agronomy and Range Science, University of California, Davis.

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TABLE 1. Characteristics of Siskiyou and Other Triticales, Wheat, and Wocus Barley at Tulelake 1973, 1974, and 1975

Variety	Yield (pounds per acre)	Height (centimeters)	Lodging (percent)	Test weight (pounds per bushel)	Seed		Fertility (percent)	Kernel weight (milligrams)
					protein (percent)	Lysine (percent)		
Triticale								
Siskiyou	7760	120	25	50.2	14.4	0.433	65	54.6
Cinnamon	6120	98	0	49.4	15.2	0.475	74	50.5
Rosner	5140	124	51	48.7	15.6	0.463	72	40.7
6TA-204	6630	131	37	47.1	13.3	0.461	74	39.4
6TA-565	6060	110	6	45.7	15.2	0.495	76	47.6
Common wheat								
Anza	6540	82	1	58.6	12.8	0.352	89	40.6
Durum wheat								
Leeds	4990	117	82	59.2	—	—	71	45.2
Barley								
Wocus	7020	97	22	48.9	—	—	—	58.8
Number of years included	3	3	3	3	2	2	2	1

TABLE 2. Characteristics of Siskiyou and 6TA-204 Triticales and Wheat Varieties at Tulelake 1974 and 1975

Variety	Yield (pounds per acre)		mean	Lodging (percent)			Height, 1975 (centimeters)	Maturity, 1974 (days from planting)
	1974	1975		1974	1975	mean		
Triticale								
Siskiyou	6890	6690	6790	5	25	15	127	127
6TA-204	5780	4870	5320	20	95	60	135	128
Common wheat								
Anza	5980	6700	6340	0	0	0	86	128
Cajeme 71	6080	5590	5830	0	35	15	79	122
Portola	6640	6610	6620	5	50	30	76	121
Yecora Rojo	6700	5960	6330	0	0	0	71	120
Durum wheat								
ND6655	6380	6190	6280	0	0	0	86	128
LSD (0.05)	980	620						
CV, %	9.5	5.9						

TABLE 3. Yield and Protein Content (100% Dry Matter Basis) of Triticale and Wheat Varieties in the Central Valley

Variety	Yield (pounds per acre)*				Percent of wheat mean	Protein (percent)* 1974
	1974	1975	1976	Mean		
Siskiyou	2540	3860	4720	3710	74	13.8
6TA-419	2900	4170	4680	3920	78	12.9
UC 8614	2730	4060	4870	3890	78	12.6
Anza	4360	5680	6430	5490	—	12.3
INIA 66R	3120	4810	5650	4530	—	14.9
LSD (0.05)	280	390				

* Means of three locations: Kings, Yolo, and Sutter counties.