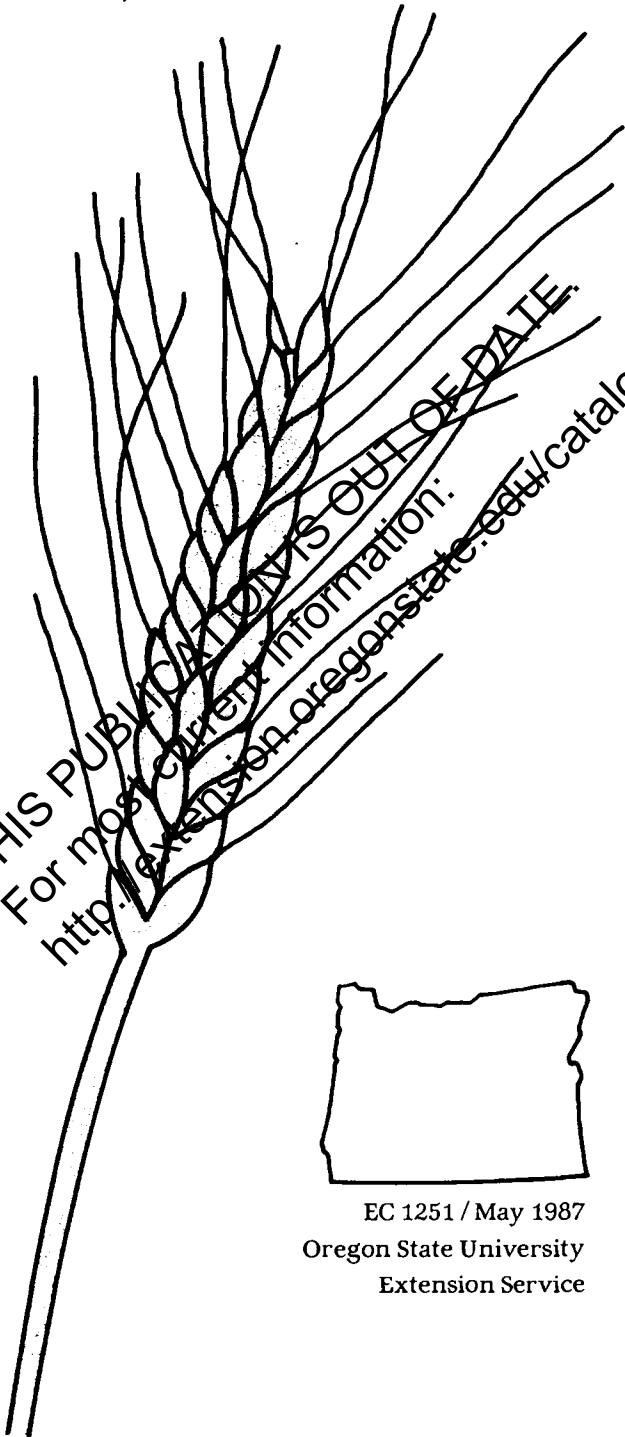


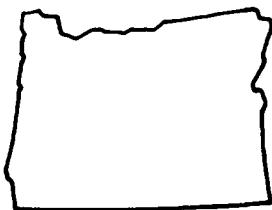
Oregon Cereal Variety Profile

# Malcolm

*A Soft White Winter Wheat*



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## Malcolm

### *A Soft White Winter Wheat*

R.S. Karow, W.E. Kronstad, S.R. James, and R.E. Brevig

Malcolm is a common soft white winter wheat released by Oregon State University in 1987. It is a semidwarf with stiff white straw and awned (bearded) nodding heads. It has had yields superior to those of Stephens and other common varieties when grown in certain regions of Oregon.

### Recommended areas

Malcolm appears to be best adapted to the irrigated areas of eastern and central Oregon. The variety has performed exceptionally well in trials conducted in Madras and Powell Butte, and it's expected to replace Stephens and Hill 81 acreage in these areas. It provides different sources of disease resistance and will complement currently grown varieties.

Performance under dryland conditions has been somewhat erratic; but on average, Malcolm yields have been equivalent or superior to those of Stephens, Hill 81, and Dusty. In the Willamette Valley, Malcolm yields have surpassed those of Stephens and Dusty but are equivalent to those of Hill 81.

Malcolm is not recommended where Cephalosporium stripe is a problem or in areas where extreme winterhardiness is required.

### Performance

**Yield.** Malcolm has the potential to dramatically outyield Stephens, Hill 81, and other commonly grown soft white winter wheats under the irrigated conditions of central and eastern Oregon (Madras, Powell Butte, Ontario). In other regions, yields have been equivalent to those of other commonly grown varieties.

When averaged across all years and sites of testing, Malcolm has shown a yield advantage of 4, 9, and 10 bushels over Dusty, Stephens, and Hill 81, respectively. Yield information for all sites is summarized in table 1.

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**Height and lodging resistance.** Malcolm is about an inch taller than Stephens but is shorter than Daws or Hill 81 (table 2). Its straw is stiff and white. Malcolm has consistently shown lodging equivalent to, or less than, Stephens and has lodging resistance superior to that of other commonly grown varieties (table 2).

**Maturity.** Malcolm is an early to midseason variety. It heads from 1 to 2 days later than Stephens but 1 or more days before Hill 81 or Daws.

**Disease resistance.** Malcolm is similar to Stephens and Hill 81 in its stripe rust reaction. All three varieties give a mixed reaction to stripe rust infections as seedlings, but adult plants are resistant to the disease.

In general, Malcolm's resistance to leaf rust is superior to that of other commonly grown soft white

varieties, though there have been instances when the resistance has been overcome.

Malcolm is resistant to common bunt; but like Stephens, it's susceptible to Septoria and Cephalosporium stripe. Malcolm has also shown isolated cases of severe powdery mildew infection.

Malcolm has only a fair level of winterhardiness and is not likely to be successful where extreme winterhardiness is required.

**Test weight and quality.** Malcolm test weights have been comparable to those of Stephens, Hill 81, and Daws in high-production irrigated areas—test weights average around 55 lb per bushel. In lower-producing dryland areas, Malcolm test weights have been above average. In western Oregon, Hill 81

Table 1—Yield data (in bushels per acre) for Malcolm and other commonly grown soft white winter wheats over several sites

Variety	Corvallis 1982-86	High yield dryland <sup>a</sup> 1982-86	Low yield dryland <sup>b</sup> 1984-86	Madras <sup>c</sup> 1980-86	Ontario 1983-86	Pendleton 1980-86	Powell Butte 1980-86	Average over all sites <sup>d</sup>
Dusty	95	76	41	—	138	84	—	99 (20)
Hill 81	105	76	40	108	139	97	121	93 (48)
Malcolm	106	77	43	125	144	97	125	103 (41)
Stephens	101	78	41	118	143	98	113	94 (48)

<sup>a</sup>Flora, Hermiston, Madras, La Grande, Pendleton, Summerville, Weston.

<sup>b</sup>Arlington, Condon, Echo, Heppner, Lexington, Moro, Pilot Rock.

<sup>c</sup>1983 data not included; trials were destroyed by hail.

<sup>d</sup>Parenthesis shows number of site-years included in average.

Table 2—Agronomic characteristics for Malcolm and other commonly grown soft white winter wheats

Variety	Winter survival <sup>a</sup>	Plant height (in)		Lodging %		Maturity	Disease reactions <sup>f</sup>			Bu wt <sup>g</sup> (lb)
		Central Oregon <sup>b</sup>	Corvallis <sup>c</sup>	Central Oregon <sup>d</sup>	Pendleton <sup>e</sup>		Rust stripe/leaf	Septoria	Cephalosporium stripe	
Daws	8	37	46	18	33	midseason	MR/S	MS	MR	57.7
Hill 81	7	37	48	10	21	midseason	MR/MR	T	MR	58.4
Malcolm	5	36	45	10	12	early-mid	MR/MR	MS	S	57.3
Stephens	5	35	44	11	32	early-mid	MR/MR	MS	S	57.0

<sup>a</sup>1 = poor, 5 = adequate, 10 = superior under Oregon conditions.

<sup>b</sup>Average of 8 data years in central Oregon.

<sup>c</sup>Average of 6 data years in Corvallis.

<sup>d</sup>Average of 9 data years in central Oregon.

<sup>e</sup>Average of 6 data years in Pendleton.

<sup>f</sup>R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, T = tolerant.

<sup>g</sup>Average of 17 data years over four sites.

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has had heavier grain than either Stephens or Malcolm.

### Milling and baking

The Western Wheat Quality Laboratory has indicated that Malcolm has good overall milling and baking quality. Flour yield is slightly less than that of Stephens; but mill score, ash content, and cookie diameters are similar.

### Production practices

Standard soft white winter wheat production practices can be used with Malcolm. Soil testing is recommended to establish proper fertility levels. Malcolm has a seed size closest to that of Hill 81; hence, seeding rates on a poundage basis should be similar to those for Hill 81.

To establish equivalent plant populations, you can plant 10 to 15% fewer pounds of Hill or Malcolm in comparison to the larger-seeded Stephens.

### Development

Malcolm was developed from a top-cross between Stephens and 63-8-189-66-7/Bezostaja. The cross was made in 1972 at the Hyslop Research Center. The original selection was bulked from an F-5 plant row in 1977. Head rows were selected and grown on the OSU Vegetable Farm near Corvallis in 1986 for seed increase to provide breeder seed.

Malcolm was developed by the Oregon State University Cereal Breeding Project directed by Warren Kronstad. Its superior agronomic potential was first identified by Steve James at the Central Oregon Agricultural Experiment Station. Yield and agronomic evaluations have been made by Rod Brevig, Chuck Burnett, Mathias Kolding, and Chuck Rohde, and other cooperators in the western United States.

The name *Malcolm* recognizes the many contributions that Malcolm Johnson, past superintendent of the Central Oregon Agricultural Experiment Station, has made to the agriculture of central Oregon.

Foundation seed stocks of Malcolm will be maintained by the Oregon State University Foundation Seed and Plant Materials Project. Send your request for seed through your county office of the Oregon State University Extension Service.

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is your assurance of varietal purity, high germination, uniform quality, and freedom from noxious weeds. Look for the blue tag or the seed-certification shipping certificate, your guarantee of these qualities.

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