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New Winter Wheat Varieties

Hoff—A Hard, Red, Winter Wheat

R.S. Karow, W.E. Kronstad, M.F. Kolding, and P.K. Zwer

Hoff is a hard red winter wheat released by Oregon State University in 1991. It is an awned, early-maturity, mid-tall height semi-dwarf. It has yield potential superior to that of other hard red winter wheats commonly grown in Oregon.

Recommended areas

Hoff appears to have wide adaptation, but it's levels of lodging resistance and winter hardiness will likely limit it's range. Hoff has moderately stiff straw, but has a tendency to lodge under irrigated or high rainfall conditions, especially if nitrogen fertility is high. Winter hardiness is equivalent or better than that of Stephens. Hard red winter wheats have traditionally been grown in the lower rainfall areas of Oregon. Hoff is well adapted to these traditional production zones.

Agronomic Characteristics

Height and lodging resistance. Hoff is shorter than the commonly grown hard red winter wheats Hatton and Wanser. It is similar in height to Hill 81. Straw strength is superior to that of older hard red winters, but is inferior to than that of commonly grown soft white wheats. Lodging has been observed at high rainfall and irrigated production test sites, especially when nitrogen fertility is excess.

Maturity Hoff is earlier in maturity than Hatton and Wanser. It heads about three days earlier than Stephens.

Disease resistance. Hoff has a higher level of resistance to foliar diseases than other commonly grown hard red winters. Hoff is moderately resistant to stripe rust, *Septoria tritici* and mildew. It is moderately susceptible to leaf rust. It's reaction to strawbreaker footrot and cephalosporium stripe are similar to those of Stephens. Hoff is susceptible to common bunt and seed should be treated with a bunt controlling fungicide to avoid problems with this disease.

Test weight and quality. Hoff's test weights have been similar to slightly better than those of other hard red winter wheats. As hard red winters tend to have better test weights than white wheats, Hoff's test weights have been consistently better than those of white wheats grown in the same environment.

Hoff's grain protein levels fluctuate significantly. It appears to respond to environmental conditions more like a white wheat than traditional reds. At high protein levels, Hoff has adequate milling and baking quality. At lower protein levels, quality may be marginal. Skillful nitrogen management will be required to achieve highest milling and baking quality in Hoff.

Winter hardiness. Hoff has a level of winter hardiness less than that of other commonly grown hard red winter wheats. It is similar in hardiness to Stephens or Malcolm. Hoff should not be grown in areas where a high level of winter hardiness is required year after year.

Yield

Hoff has the potential to out yield older hard red winter wheat varieties such as Wanser and Hatton by a significant degree. Twenty to thirty percent yield increases are not uncommon. For those growers already raising hard red winter wheats, Hoff is an obvious improvement. On the other hand, if the basis of comparison is a soft white wheat such as Stephens, the choice is less clear. Red wheats on average have a lower yield potential than whites. In high yielding environments, commonly grown white wheats consistently out yield Hoff by 10 to 20 percent. In environments with lower yield potentials, this difference is less pronounced and in some years potential is similar. First time hard red winter wheat growers are cautioned to proceed slowly. Grow small acreages to test both fit of production practices and environment and ability to market.

Development

Hoff was selected from progeny of a cross between Probstorfer-Extrem (a winter wheat) and Tobarri 66 (a spring wheat). This cross was made in 1981 at the International Maize and Wheat Improvement Centre in Obrigon, Mexico. The F1 and subsequent segregating generations were grown at several locations in Oregon including the Willamette Valley and Sherman and Umatilla Counties. ORCR8313, the experimental designation for Hoff, was selected in the F5 generation from a bulked population. Breeders seed was produced through a head row selection and evaluation process. Foundation seed blocks were planted in the fall of 1991.

Hoff was developed by the Cereal Breeding Project in the Dept. of Crop and Soil Science at Oregon State University. This project is lead by Dr. Warren Kronstad. Funding for variety development work in general is provided by the OSU Agricultural Experiment Station, grants obtained through the United States Agency for International Development (USAID) and grants

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Russell S. Karow, Extension cereal crop specialist; Warren E. Kronstad, distinguished professor of plant breeding and genetics; Mathias F. Kolding, cereal breeder and senior instructor, Hermiston Agricultural Research and Experiment Station; and Pamela K. Zwer, cereal breeder and assistant professor of crop sciences, Columbia Basin Agricultural Research Center, Oregon State University.

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provided by the Oregon Wheat Commission. Special funding provided by the Oregon Wheat Commission for development of hard red winter wheats sped the release of Hoff.

The name Hoff is in recognition of the many contributions Mr. Neil Hoffman made while superintendent of the Malheur Branch Experiment Station.

Seed stocks

Foundation seed stocks of Hoff will be maintained by the Oregon State University Foundation Seed and Plant Materials Project. Seed request forms are available through you local OSU county extension office.

Table 1. Yield, test weight and height data for five winter wheat varieties grown at eight eastern Oregon locations in 1990-91.

Variety Market Class	Batum HRW	Hoff HRW	Madsen SWW	Stephens SWW	Wanser HRW	PLSD (5%)
1990	bu/a					
Arlington	33	29	32	34	30	7
Athena	81	67	93	94	49	10
Helix	85	65	80	81	56	13
Heppner	60	49	68	64	44	8
LaGrande	106	109	122	128	86	14
Lexington	56	40	46	57	40	11
Moro	47	38	45	47	32	6
Pendleton	87	84	93	101	43	8
8-location Average						
Yield (bu/a)	69	60	72	76	48	8
Test wgt. (lb/bu)	58.8	62.0	60.0	60.4	61.6	1.1
Height (in)	37	39	36	33	41	1
1991	bu/a					
Arlington	33	—	32	23	21	6
Athena	92	75	100	96	56	16
Helix	70	43	68	62	69	16
Heppner	44	34	36	33	29	7
LaGrande	88	99	112	107	66	17
Lexington	25	23	30	34	19	4
Moro	60	40	53	52	39	8
Pendleton	65	67	78	83	79	11
8 location Average						
Yield (bu/A)	60	54	64	61	47	10
Test wgt. (lb/bu)	59.0	61.2	59.3	60.2	61.1	1.3
Height (in)	30	33	31	30	35	2

Table 2. Yield data for Stephens and several hard red winter wheats over various years and locations.

Variety	Corvallis 1989	Corvallis 1991	Hermiston 1991	Madras 1991	Ontario 1991
	bu/a				
Stephens	100	120	112	84	125
Batum	66	47	—	72	—
Hatton	47	—	—	72	—
Hoff	91	82	95	104	112
Wanser	65	34	—	64	—
PLSD (5%)	16	23	—	20	25