are tan and short, with few to several long basal hairs. Awns are few or absent, but when present are short and nontwisted. The kernels are plump and predominately fluorescent, but up to 2% may be nonfluorescent variants. Occasional tall or late plants may occur.

Ozark is moderately resistant to stem rust (*Puccinia graminis* Pers: Pers. f. sp. *avenae* Eriks. & E. Henn), and resistant to halo blight [*Pseudomonas coronafaciens* (Elliott) Stevens 1925] and smut [*Ustilago avena* (Pers.) Rostr.]. It is moderately susceptible to barley yellow dwarf virus and crown rust (*Puccinia coronata* Corda var. *avenae* W.P. Fraser & Ledingham) and susceptible to soilborne mosaic virus.

The name Ozark was chosen to recognize that much of the breeding work occurred in Fayetteville, which is located in the Ozark Plateaus, and to reflect that this cultivar has sufficient winterhardiness to survive winters in northern Arkansas. Ozark will not be protected under the Plant Variety Protection Act. Breeder and foundation seed of Ozark will be maintained by the Arkansas Agricultural Experiment Station, Fayetteville, AR 72701.

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REGISTRATION OF 'NEWDAK' OAT

'NEWDAK' SPRING OAT (*Avena sativa* L.) (Reg. no. CV-334, PI 540399) was developed at the North Dakota Agricultural Experiment Station in cooperation with the USDA-ARS and co-released by the North Dakota and Cornell Agricultural Experiment Stations in 1990. It was designated ND810104 during development and testing. Newdak was developed from a RL3038/'Goodland'//'Ogle' cross made in 1979. RL3038, provided by R.I.H. McKenzie (Agriculture Canada Research Station, Winnipeg, MB), possesses rust resistance genes *Pc-38, Pc-39, Pg-2,* and *Pg-13*. RL3038 was derived from a complex pedigree that included 'Rodney' and 'Pendek'.

The F_2 was grown in the field in 1979 and panicles were selected based on plant reaction to natural infection of stem rust (incited by *Puccinia graminis* Pers.:Pers. (f. sp. *avenae* Eriks. & E. Henn.) and crown rust (incited by *Puccinia coronata* Corda. f. sp. *avenae*). The F_3 and F_4 were advanced in the greenhouse using modified single-seed descent from seedlings resistant to crown rust races CR13 and CR36 and stem rust race NA27. The F_5 lines from resistant seedlings were grown in panicle rows in 1980 at Fargo, ND, with further selection for stem and crown rust resistances. The line which became Newdak resulted from bulking seed of an $F_{4:5}$ line. Breeder seed of Newdak was produced by bulking seed from ≈100 F_9 panicle hills that were typical of the Newdak phenotype.

Newdak has been evaluated for yield in North Dakota since 1982, and in the Uniform Midseason Oat Performance Nursery (UMOPN) during 1985 to 1987. Based on 41 location-yr in North Dakota and 58 location-yr in the UMOPN, Newdak is high yielding and has midseason maturity. In North Dakota, its average grain yield was 3.5 and 6.1% above 'Dumont' and 'Otana', respectively. Its test weight is medium, but milling yield is high. In New York, the 5-yr average grain yield of Newdak was 2 and 12% higher than Ogle and 'Porter', respectively. Newdak is medium in height and has moderate lodging resistance. It possesses genes *Pc-38* and *Pc-39* for resistance to crown rust, and possesses *Pg-13* for resistance to stem rust. Newdak has a good level of tolerance to barley yellow dwarf virus.

Culms and leaf margins of Newdak are glabrous and ligules are present. It has equilateral panicles with ascending branches. Spikelet separation occurs by fracture and floret separation by heterofracture. Lemmas are glabrous and basal hairs are absent. Kernels of Newdak are white, fluorescent, medium to large, and midplump. Awns are absent.

Variety protection will be sought under the Plant Variety Protection Act, Public Law 91-577, with the option that Newdak may be sold for seed by name only under the certified seed classes designated as breeder, foundation, registered, and certified. Breeder and foundation seed will be maintained by the Seedstock Project, Agricultural Experiment Station, North Dakota State University, Fargo, ND 58105-5051 and the New York Seed Improvement Cooperative, 249 Emerson Hall, Cornell University, Ithaca, NY 14853.

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References and Notes

1. M.S. McMullen, Crop and Weed Sciences Dep., North Dakota State Univ., Fargo, ND 58105; and M.E. Sorrells, Dep. of Plant Breeding and Biometry, 252 Emerson Hall, Cornell Univ., Ithaca, NY 14853. Research supported in part by the Quaker Oats Co. Cooperative investigations of the North Dakota Agric. Exp. Stn. and USDA-ARS. Journal article no. 1929. Registration by CSSA. Accepted 31 Jan. 1991. *Corresponding author.

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REGISTRATION OF 'NEWHY' RS HYBRID WHEATGRASS

'NEWHY' RS HYBRID WHEATGRASS [quackgrass, *Elytrigia repens* (L.) Nevski, $2n = 6x = 42$ × bluebunch wheatgrass, *Pseudoroegneria spicata* (Pursh.) A. Löve, $2n = 4x = 28$] (Reg. no. CV-18, PI 538763), was developed and released in December 1989 by the USDA-ARS in cooperation with the Utah Agricultural Experiment Station and the USDA-SCS. The new hybrid cultivar is recommended for range sites with moderate salinity problems that receive at least 330 mm of annual precipitation.

The cultivar was derived from two germplasms (RS-1 and RS-2) released in 1980 (1). These two populations were morphologically similar with the exception that RS-2 was slightly more rhizomatous than RS-1. Two additional cycles of selection were completed with combined RS-1 and RS-2 breeding populations to develop the parental germplasm of NewHy (F_8 generation).

The initial RS hybrid population was established in 1962 (2). The F_1 hybrid was a pentaploid ($2n = 5x = 35$), meiotically irregular, beset with chlorophyll deficiencies, and, in general, with poor vegetative vigor. Although the hybrid plants were only partially fertile, adequate seed set permitted selection for improved fertility without chromosome doubling. From the F_1 to F_5 generation, selection was based largely on fertility (seeds per spike) and only plants with

characteristics of both parental species and moderate to no rhizome development were retained for generation advance. More intense selection for agronomic performance and adaptation to semiarid range conditions was initiated in the F_5 generation. The objectives were to combine the vigor, productivity, salinity tolerance, and persistence of quackgrass with the drought resistance, caespitose growth habit, seed quality, and forage quality of bluebunch wheatgrass.

NewHy is meiotically stable with a chromosome number of $2n = 6x = 42$ and fully fertile. Dewey (3) concluded that the genome constitution of the parental species was $S_1S_1S_2S_2XX$ for quackgrass and SSSS for bluebunch wheatgrass, and that genetic exchange in the RS hybrid had occurred between the S genomes of the two species.

Rate of phenological development is intermediate to the parental species and anthesis occurs from mid to late June in nurseries near Logan, UT. The hybrid produced 560 kg seed ha^{-1} on an irrigated site near Miles City, MT (P.O. Currie, 1989, unpublished data). Degree of rhizome development in the hybrid breeding population readily responds to selection pressure (4). Essentially caespitose types have been derived after two cycles of selection. Rhizome development of the NewHy cultivar, as measured by clone diameter, ranges from <0.1 m to ≈ 1.0 m yr^{-1} on range sites receiving from 330 to 380 mm annual precipitation. On these sites, $>85\%$ of the plants had a vegetative spread of <0.5 m during the season.

NewHy has demonstrated excellent resistance to excess soil salinity (5). In greenhouse trials (W.H. Horton, 1989, unpublished data), salinity resistance of NewHy approached that of tall wheatgrass [*Thinopyrum ponticum* (Podp.) Barkworth & D.R. Dewey]. Agronomic performance of the cultivar has been evaluated on several range sites in the Intermountain West and, to a lesser extent, in the Great Plains of the USA. It is most productive on slightly saline or alkaline range sites receiving at least 330 mm of precipitation annually or supplemental irrigation. Results from a trial on a range site in northwestern Utah, which receives an average of 366 mm annual precipitation, are typical. Poor seed germination resulted in stands of $<50\%$ during the establishment year. As stands improved through tillering and rhizome development during the third and fourth years, NewHy produced more forage than any of the other 16 entries included in the trial. It is noteworthy that NewHy, unlike its quackgrass parent, did not spread beyond its plot borders into adjacent plots. Similar trends were observed in a trial established in the foothills of the La Sal Mountains in southern Utah, at an altitude of 1 900 m and with an annual average of 330 mm precipitation.

Forage quality of NewHy, based on neutral detergent fiber (NDF) and percent crude protein, compared favorably with intermediate wheatgrass [*Thinopyrum intermedium* (Host) Barkworth & D.R. Dewey] under semiarid conditions (W.H. Horton, 1990, unpublished data). Although NewHy begins growth early in the spring, it remains more succulent and palatable for livestock later in the growing season than most other wheatgrasses, especially on dryland range sites. In a trial in central Utah, cattle grazed NewHy in preference to all other entries in the trial, including intermediate wheatgrass and crested wheatgrass [*Agropyron desertorum* (Fisch. ex Link) Schultes]. The hybrid is resistant to moderate grazing pressure after establishment and it recovers rapidly after grazing or defoliation.

Although considerable variation exists among seedlots, seed quality tends to be somewhat lower than grasses such as crested wheatgrass and intermediate wheatgrass. Improved seed quality continues to be a breeding objective; however, until this deficiency is corrected, it is recommended that seeding rates from 9 to 12 kg ha^{-1} be used in the areas of adaptation. After emergence, seedlings are vigorous and establish themselves rapidly under relatively harsh conditions.

Breeder seed will be maintained by the USDA-ARS at Logan, UT. Foundation seed is being produced from breeder seed by the USDA-ARS at Logan and the USDA-SCS at Los Lunas, NM. Foundation seed will be distributed by the Utah Crop Improvement Association and the USDA-SCS. Because of the morphological similarity of NewHy seed to that of quackgrass, protection has been applied for under the Plant Variety Protection Act of 1970. Conditions of this license specifies that NewHy seed can be marketed only as a class of certified seed.

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REGISTRATION OF 'VERNE' WHEAT

'VERNE' WHEAT (*Triticum aestivum* L.) (Reg. no. CV-764, PI 547901) was developed by the Kentucky Agricultural Experiment Station (KAES) and released in 1990. Verne, tested as KY83-38, was released for its superiority in grain yield and test weight under conventional management. The cultivar was named for the late V.C. Finkner, small-grains breeder at the University of Kentucky for many years. Verne was derived from the cross 'Red Coat'/'Gaines'/5/'Taylor'/ /'Norin 10'/'Brevor'/3/Unknown parent/4/'Oasis'. An F_3 bulk of this cross was obtained in 1981 from T.M. Starling, then small grains breeder at Virginia Polytechnic Institute and State University. Approximately 50 heads were harvested and planted as F_4 headrows. A single F_4–derived progeny row was harvested in bulk and the population was headrowed and reselected through the F_8 generation. Five F_8 headrows were bulked on the basis of uniform plant type and increased in the F_9 and F_{10} generations to produce F_{11} breeder seed.

Verne is a white-chaffed, awnletted soft red winter wheat with midlong spikes and large kernels. It is of midseason maturity, heading ≈ 4 d later than 'Coker 916', and 2 d earlier than 'Cardinal'. Verne is tall, equivalent in height to Cardinal, and will often lodge under high N rates (>10 g m^{-2}). In several years of testing, lodging ratings of Verne and 'Saluda' have been similar. Verne is slightly more winterhardy than Saluda.

Verne has been tested in the Kentucky state variety trial since 1987, and in the Uniform Eastern Soft Red Winter