REGISTRATION OF BONKEE OATS
(Reg. No. 211)
K. J. Frey, J. A. Browning, and R. L. Grindeland

'BONKEE' oats (Avena sativa L.), C.I. 7563, Iowa C648, is very similar to 'Cherokee,' 'Nemaha,' and 'Bonham' varieties in agronomic characteristics, but differs in the genes controlling reaction to stem rust. It was derived from the cross Bonham x Cherokee 'R.L. 2105.' R.L. 2105 is a Canadian selection from the cross 'Victoria' x 'Banner' x 'Hajira'. At the end of the last backcrossing program (Bonham), two nearly isogenic lines were available; one carried the A gene and the other the B gene for rust resistance. Both stem rust resistance genes were transferred from R.L. 2105. From a cross between these two strains, made in 1957, forty F2 panicle rows were grown in the field in 1958. Three of the F2 progeny rows that combined the A and B stem rust reaction genes in the homozygous state with the agronomic characteristics of the recurrent parent were bulked to make the initial seed for Bonkee. The final increase of foundation seed was made in 1962 and distributed to certified seed growers in 1963. Certified seed of Bonkee was generally available for commercial acreage in 1964.

Bonkee was similar in performance in Iowa to Cherokee and Nemaha when tested during the stem rust-free years, 1961-65. The lodging scores, grain percentages, test weights, and grain yields did not vary significantly among the three varieties. Bonkee possesses the AB genes which give resistance to races 6, 7, and 7A; whereas Cherokee, Nemaha, and Bonham possess the A gene and are susceptible to these races. There is some indication from greenhouse and field tests that Bonkee has greater tolerance to crown rust than Cherokee, Bonham, and Nemaha.

Bonkee is short to medium in height and early in maturity. It produces large, plump seeds that are awnless and ivory to pink in color. Under certain environmental conditions (probably associated with high temperatures at ripening time), the palea will show dark discoloration, even to the point of becoming black. This discoloration does not affect the groat. Foundation seed of Bonkee is maintained by the Committee for Agricultural Development and the Iowa Agricultural and Home Economics Experiment Station.

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(Reg. No. 211)
K. J. Frey, J. A. Browning, and R. L. Grindeland

'SIERRA' oats (Avena sativa L.), C.I. 7706, CAS 5164, is from a special cross. Its parents were a mutant monosomic of 'Kanota' (A. byzantina L.) and a rust resistant wild selection of A. fatua. The crossing was done in 1947—pollination of the monosomic without emasculation, followed by positive identification, via dominance traits, of the hybrids and selfs in 1948. In F2,F3, all plants with unwanted wild-type characters were discarded. Three years of testing F2-derived lines followed. A later maturing natural mutant line was isolated in 1955. It proved to be homozygous and superior in performance and was released in 1961 after state-wide testing.

In launching this breeding program the author had two purposes: to discover and use new genes from a compatible wild species and to develop a better method for the hybridization of this difficult to cross crop. Since most cultivated oats have been developed in and for humid regions, any use of desert-derived A. fatua parents should help improve the adaptiveness of oats in arid regions.

In the 5 years since its 1962 release, Sierra has become the most widely grown oat variety in California for both grain and hay production. This resulted from its better yields and unique shatter resistance, which has made conventional windrowing unnecessary.

Sierra has large stems and leaves, a compressed panicle, and motiled grey or white seeds, with an occasional small awn. Under some conditions the palea may be almost black. Spikelet separation is by fracture, and floret separation generally by disarticulation, with a large rachilla segment remaining attached to the first floret. Growth is erect and maturity relative late. Sierra has been resistant to the races of crown and stem rust prevalent in California but is susceptible to some races common in other areas.

Sierra was a cooperative development by the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture and the Agriculture Department of the California Agricultural Experiment Station. The California Station will maintain breeder seed.

REGISTRATION OF SIERRA OATS
(Reg. No. 213)
C. A. Suneson

'RAPIDA' oats (Avena sativa L.), C.I. 8005, is the third pure line variety derived from crossing with wild oats to get better desert area adaptation. In this case, a dominant gene for extreme earliness was isolated. The variety name stresses this attribute. Though too early to permit maximum yields under optimum rainfall, Rapidia has a genetic background permitting higher productivity than has ever been obtained in California, with equivalent extreme earliness in barley or wheat. For promotion of the variety, the new cropping potentials of Rapidia will be stressed whether grown for hay, grain, or pasture. For one thing, it could become a classical "drought-escaping" winter crop in California's 7- to 11-inch (18 to 28.9 cm) rainfall areas.

The parents were a monosomic line of 'Palestine,' A. byzantina L., and two different selections of wild oats — A. fatua x Palestine (mon) 2x A. fatua. The crosses were made in 1949 and 1958. The terminal F2 selection was made in 1961. This variety is outcross-prone, and therefore requires some field isolation. It also has a relatively high monosomic mutation rate. Taxonomically, it should class as A. sativa L., but its floret separation is more intermediate than in the variety Sierra. It has medium height, straw, and leaf-size, and rather large white seeds, the primary seed being prominently awned. Its shatter resistance is adequate, and its disease reactions generally intermediate. From July sowing, it was matured in 75 to 80 days.

This variety was developed by the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, cooperating with the Agronomy Department, California Agricultural Experiment Station. Foundation seed was first released in 1966. The California Agricultural Experiment Station will maintain breeder seed.

REGISTRATION OF SIERRA OATS
(Reg. No. 213)
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