REGISTRATION OF ‘LINFORD’ SOYBEAN

‘LINFORD’ SOYBEAN [Glycine max (L.) Merr.] (Reg. no. 270, PI 542043) was developed by the USDA-ARS and the Illinois Agricultural Experiment Station in a program to provide cultivars resistant to soybean cyst nematode (SCN) (Heteroder a glycines Ichinohe) with improved performance in the Midwest. It is named for the late Maurice B. Linford, a plant pathologist who specialized in nematology at the University of Illinois from 1949 to 1960.

The parents of Linford are ‘Williams 82’ (1) and ‘Fayette’ (2). The cross Williams 82 × Fayette was made in the winter of 1979–1980 in the greenhouse at Urbana; the F1 was grown at Urbana in 1980, and the F2 advanced in bulk in the winter of 1980–1981 in the USDA winter nursery in Puerto Rico. The F3 population was grown in 1981 near Mount Vernon, IL, in a field heavily infested with SCN Race 3. The more vigorous plants were harvested and progeny tested in the greenhouse in soils infested with SCN Races 3 and 4. In 1982 selected F4 lines were grown in a field infested with SCN Race 3 near Catlin, IL. The best-appearing rows were harvested; these included L82C-1246, the experimental designation of Linford. It was then tested in replicated yield tests in SCN-infested fields in Illinois during 1983 and 1984 and in the cooperative SCN Regional Tests in 1985 to 1989.

Linford is in maturity Group III (relative maturity 3.8), averaging ≈1 d earlier than Fayette. It is best adapted to 38 to 41° N lat. It is similar to Fayette in SCN resistance and performance, except that it yields ≈5% higher on both infested and noninfested fields.

Linford is very similar to its parent variety Fayette in appearance. It has indeterminate stems, white flowers, tawny pubescence, tan pods, and seeds with a shiny yellow coat and black hilum. Linford is moderately susceptible to Phylloxera rot (caused by Phylloxera megasperma Drecbs. f. sp. glycines T. Kuan & D.C. Erwin). It is heterogeneous for resistance to downy mildew (Peronospora manshurica (Naumov) Syd. ex Gäum.) and moderately resistant to brown stem rot (Phialophora gregata (Allington & D.W. Chamberlain) W. Gams). In all of the infested fields where the SCN Regional Test III was grown (10 fields in four states), Linford has shown good resistance to SCN. The SCN resistance is similar to that of parent variety Fayette and traces originally to a seed introduction PI 88788 from Liaoning Province in northeast China (3,4).

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Kunitz was developed by backcrossing of an F2 plant selected from the BC4, Williams 82 × PI 157440. The recurrent parent Williams 82 has the genotype for the common type of KTI. The cultivar Kum Du, identified as PI 157423 (5), was released in December 1989 for commercial production through Illinois Foundation Seeds, Inc., P.O. Box 722, Champaign, IL 61820. Breeder seed will be maintained by the Illinois Agricultural Experiment Station and the USDA-ARS as part of a program to transfer unique seed traits to the widely grown cultivar Williams 82 (6) X PI 542044. The recurrent parent Williams 82 has the KTI-a gene (7). Kunitz is similar to Williams 82 in all visible traits (indeterminate stem, white flowers, tawny pubescence, tan pods, and seeds with a shiny yellow coat and black hilum). In performance trials in 11 fields, yield, oil, and protein content were similar to Williams 82. It averaged a day earlier (relative maturity 3.8, vs. 3.9 for Williams 82) and slightly higher protein content. It is resistant to many races of Phytophthora megasperma Drechs. f. sp. glycines (Nakan.) Dye, to bacterial pustule leaf spot (Xanthomonas campestris pv. glycines (Nakano) Dye), and to powdery mildew (Microsphaera alnicola Peck) (presumably gene Rmd).

Kunitz was previously identified as KTI-null (8), but it was released for experimental use in 1985 and found to be suitable as a donor parent to transfer unique seed traits to the widely grown cultivar Williams 82. Its genotype is the common type of KTI (KTI-a/gene Rmd). Kunitz was released in December 1989 for commercial production through Illinois Foundation Seeds, Inc., P.O. Box 722, Champaign, IL 61820. Breeder seed will be maintained by the Illinois Agricultural Experiment Station and the USDA-ARS as part of a program to transfer unique seed traits to the widely grown cultivar Williams 82.