Registration of 'Garnet' Spring Rapeseed

'Garnet' spring rapeseed \( [Brassica napus \text{ L. subsp. oleifera}] \) (Metzg.) Sinskaya \( f. \) annua] \( \text{Reg. no. CV-17, PI 597355} \) was developed for use as an industrial oil-quality cultivar by the Idaho Agricultural Experiment Station.

Garnet is a near pure-line spring rapeseed cultivar with high erucic acid content in the seed oil and canola-quality seed meal. Garnet was selected for adaptability to environmental conditions of the Pacific Northwest region (Idaho, Oregon, Washington, and Montana). The cultivar was developed from a single plant selected in 1994 from an \( F_4 \) population derived from the cross 'DNK.89.213'/'Hero'. 

\( \text{DNK.89.213 has low erucic acid content (H0 g kg}^{-1} \) and <30 \( \mu \text{mol g}^{-1} \) of total glucosinolate in defatted seed meal; it is a selection originating from Dansk Planterforædling, Denmark. Hero is a cultivar developed in 1989 at the University of Manitoba in Canada, with high erucic acid content (>500 g kg\(^{-1}\)) in the seed oil and low glucosinolate content (<30 \( \mu \text{mol g}^{-1} \)) in the seed meal.

\( F_1 \) seed from the original cross was produced in the spring of 1992. Progeny from the cross were evaluated in a multivariate cross prediction trial (4) in the greenhouse in 1993 (\( F_1 \) plants) and in the field in 1993 (\( F_2 \) plants). Seeds from the \( F_3 \) population were evaluated for glucosinolate content using a glucose-sensitive Test-tape procedure (5). Lines with very low Test-tape scores (<0.5 units, on a scale of 0 to 5) were selected and planted in field trials as single-plant plots in 1993. A further winter seed increase was carried out from \( F_3 \) to \( F_4 \) seed in 1994 onwards. Oil and seed meal glucosinolate and erucic acid content, total glucosinolate in defatted seed meal, oil glucosinolate content, and fatty acid profile of Garnet were evaluated in the oil using a high-seed technique (2,3). The highest erucic acid selections (those with >500 g kg\(^{-1}\)) from half-seed analyses were selfed over the winter of 1993-1994 in the greenhouse. Seed from each \( F_4 \) plant was evaluated for glucosinolate content using a glucose-sensitive Test-tape procedure (5). Lines with very low Test-tape scores (<0.5 units, on a scale of 0 to 5) were selected and planted in field trials as single-plant plots in 1994. A further winter seed increase was carried out from \( F_3 \) to \( F_4 \) seed in 1994-1995.

Breeder seed of Garnet was derived from a single plant selected from the \( F_6 \) population grown in the greenhouse in 1994-1995. This seed was grown as \( F_7 \) single-plant field plots in 1995, and prior to harvest, 30 single-plant selections were identified with the desired plant uniformity, oil content, oil seed meal quality. In 1996, \( F_8 \) seed from these 30 plants were grown in single-plant plots. During the 1996 growing season, single-plant plots were visually inspected and off-type plants removed. Before harvest, 20 single-plant selections were taken from each of the 30 single-plant plots and evaluated for fatty acid profile and seed meal glucosinolate content. Four hundred single \( F_8 \) seeds were planted and their seedlings used to develop foundation seed in the spring of 1997.

Agronomic performance of Garnet was compared with the control cultivars Hero, Reston, and \( R.500 \) in replicated plot trials over 3 yr (1994, 1995, and 1996). The 1996 trials were part of the Pacific Northwest Canola Variety Trials (PNWCVT) (1). Hero and Reston are high erucic acid \( B. \) \text{napus} cultivars developed at the University of Idaho, Moscow, ID 83844-2331. Small amounts of foundation seed of Garnet were produced for use as an industrial oil-quality cultivar by the Idaho Agricultural Experiment Station.

Sterling is a near pure-line spring rapeseed cultivar with high erucic acid content in seed oil and canola-quality seed meal selected for adaptability to environments throughout the Pacific Northwest region (Idaho, Oregon, Washington, and Montana). Sterling was developed from a single plant selected in 1994 from an \( F_3 \) population derived from the cross 'Jaguar'/'Hero'. Jaguar is a canola-quality cultivar (i.e., <20 g kg\(^{-1}\) erucic acid content and <30 \( \mu \text{mol g}^{-1} \) glucosinolate content) that was developed by Maribo Seeds Co., Denmark. Hero is a spring rapeseed cultivar with high erucic acid content (>500 g kg\(^{-1}\)) in the seed of a near pure-line cultivar developed in 1898 at the University of Manitoba in Canada.

\( F_1 \) seed from the original cross was produced in the spring of 1992. Progeny from the cross were evaluated in a multivariate cross prediction trial (4) in the greenhouse in 1992 (\( F_1 \) plants) and in the field in 1993 (\( F_2 \) plants). Seeds from the \( F_3 \) population were selected...