Registration of ‘IdaGold’ Yellow Mustard

‘IdaGold’ yellow mustard (Sinapis alba L.) (Reg. no. CV-9, PI 597356) was developed for use as a condiment spice yellow mustard by the Idaho Agricultural Experiment Station.

IdaGold is an open-pollinated cultivar selected for adaptation to dryland environments of the Pacific Northwest (Idaho, Oregon, and Washington). The cultivar was developed from a single plant selected in 1992 from an F5 population derived from the cross ‘Mustang’/‘BHLG.3553’. The original cross was made in 1988 and the population was advanced to F5 by completing four cycles of hand self-pollination, without selection. Mustang is a high erucic acid (>450 g kg⁻¹) cultivar that originated in Svalov, Sweden, and BHLG.3553 is a low erucic acid (<50 g kg⁻¹) breeding line developed by Agriculture and Agri-Food Canada, Saskatoon, SK. Both parental lines have high glucosinolate (>250 μmol g⁻¹) content in the seed meal. The original F6 population of IdaGold was selected in the field in 1992 and replicated field evaluation beginning in 1993.

Performance of IdaGold was compared with the cultivars Gisilba, Tilney, and Ochre in field trials planted in Idaho, Washington, and Oregon in 1993 (5 locations), 1994 (6 locations), 1995 (7 locations), and 1996 (5 locations). Gisilba and Ochre were both developed at Saskatoon; Tilney was developed at Horticulture Research International, Wellesbourne, England. No yellow mustard cultivars have been released or developed in the USA, and these control cultivars have predominated the acreage in both the USA and Canada over the past 3 yr.

Yield of IdaGold was consistently higher than control cultivars during the 4 yr of testing. Averaged over all locations, mean seed yield of IdaGold was 1785 kg ha⁻¹, compared 1600 kg ha⁻¹ for Gisilba, 1580 kg ha⁻¹ for Ochre, and 1564 kg ha⁻¹ for Tilney. Compared with these three cultivars, IdaGold was the highest-yielding entry at 11 of 23 year-sites and was ranked second highest at 9 year-sites.

IdaGold has significantly higher (P < 0.05) total glucosinolate content (244 μmol g⁻¹) than Tilney (231 μmol g⁻¹) and significantly (P < 0.05) lower total glucosinolates than Gisilba (257 μmol g⁻¹). Sinalbin (p-hydroxybenzyl glucosinolate) accounted for the greatest proportion (97%) of total glucosinolate. IdaGold has a seed oil fatty acid profile of 280 g kg⁻¹ oleic acid, 320 g kg⁻¹ erucic acid, and 100 g kg⁻¹ linolenic acid, which is not significantly different (P < 0.05) from either Gisilba or Tilney.

Seedling emergence of IdaGold was not significantly different (P < 0.05) from the three control cultivars. IdaGold flowers 1 to 2 d later than Gisilba flowers. Plants are erect in habit and stems are hollow. Average plant height is 129 cm, compared with 121 cm for Gisilba and 133 cm for Ochre. Averaged over years and sites, mean oil content of IdaGold was 251 g kg⁻¹, which was not significantly different (P < 0.05) from any of the three control cultivars. Average 1000-seed weight was 5.5 g and was not significantly different (P < 0.05) from Tilney. Seed color is bright yellow.

Breeder seed was produced from the original selected F6 population grown as single-plant plots in 1991. At harvest, the highest-yielding plot was selected and the seed used for trials in 1992. Seed for subsequent field evaluation was derived by bulking seed from single-plant plots on an increase.

Breeder seed of Selkirk was produced using a procedure of selecting single plants, screening seed for glucosinolate content and fatty acid profile, selecting desirable oil lines, and planting these in single-plant plots the following year. This procedure was repeated with Selkirk for three generations (1990–1991, 1991–1992, and 1992–1993). Single-plant selections (taken from the 1995–1996 breeder seed) was used to plant foundation seed of Selkirk.

Selkirk was developed from a single plant selected in 1992 from an FS population derived from the cross ‘Sipal’/‘Indore’/‘Bienvenu’/‘Ringot’. Sipal is an edible oil-quality rapeseed with high glucosinolate, high erucic acid (>450 g kg⁻¹) content, and low glucosinolate content (>120 μmol g⁻¹) cultivar developed by the Swedish Seed Association (Svalov, Sweden). Selkirk was developed at Saskatoon; Tilney was developed at Horticulture Research International, Wellesbourne, England. No yellow mustard cultivars have been released or developed in the USA, and these control cultivars have predominated the acreage in both the USA and Canada over the past 3 yr.

References and Notes

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