involved was primarily from the cultivars Amber Pearl (A1-6) and South American (4545-31). Selection in the backcross generation to popcorn was primarily for desirable plant and ear type. Top crosses were made in the S1 and S2 generations on a single cross of inbreds from the cultivars Supergold and South American, and selection was based primarily on popping expansion volume. Plant and ear characteristics are given in Table 1. Kernel size of HP68-07 is large enough to make a satisfactory seed parent; however, it has a long tight husk that often reduces seed set. Pollen production is fair, and sensitive to plant stress. In nursery observations, HP68-07 showed some resistance to anthracnose and carries the gene H1 that confers resistance to Race 1 of northern corn leaf blight. HP68-07 has performed best in crosses with lines from the cultivar Supergold, contributing excellent stalk quality and fair popping expansion volume and yield.

HP62-02 and HP72-11 were released 1 Mar. 1984 and HP68-07 1 Mar. 1986. Hand-pollinated breeder seed is available in germplasm amounts (100 kernels) from the Popcorn Project, Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907-1155. Sib-increased seed for use in commercial hybrid seed production is available from the Agricultural Alumni Seed Improvement Association, P.O. Box 158, Romney, IN 47981.

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References and Notes
2. Dep. of Botany and Plant Pathology, Purdue Univ., West Lafayette, IN 47907. Contribution from the Indiana Agric. Exp. Sta. Journal Paper no. 12565. This research was supported in part by a grant from the Popcorn Institute. Registration by CSSA. Accepted 31 Jan. 1991. *Corresponding author.


REGISTRATION OF 11 SUNFLOWER PARENTAL LINES: CM 612, CM 614, CM 615, CM 616, CM 617, CM 619, CM 620, CM 621, CM 622, CM 624, AND CM 625

ONE NONOILSEED SUNFLOWER (Helianthus annuus L.) line, CM 612 (Reg. no. PL-57, PI 546351); four white-seeded bivalent-resistant lines, CM 614 (Reg. no. PL-58, PI 546352), CM 615 (Reg. no. PL-59, PI 546353), CM 616 (Reg. no. PL-60, PI 546354), and CM 617 (Reg. no. PL-61, PI 546355), and four restorer lines CM 619 (Reg. no. PL-62, PI 546356), CM 620 (Reg. no. PL-63, PI 546357), CM 621 (Reg. no. PL-64, PI 546358), and CM 622 (Reg. no. PL-65, PI 546359), were released in April 1988. Two additional oilseed lines, CM 624 (Reg. no. PL-66, PI 546360), and CM 625 (Reg. no. PL-67, PI 546361), were released in February 1990. These sunflower lines were developed by Agriculture Canada, Morden, MB, as sources of earliness, seed resistance, and high oil content. CM 612 is a non-oil, single-headed sunflower line. It is a composite of six S1 plants from ‘Mennonite’. CM 612 flowers about the same time as RHA 294 (1) and is about 15 cm shorter. The achenes are greyish-black in color, with narrow white stripes. When CM 612 is combined with RHA 294, it produces hybrids that mature 4 d earlier than the commercial hybrid checks but with slightly lower yields. The hybrid produces achenes of which 15% are retained on a 20-mesh screen, compared with an average of 33% for the most commonly grown non-oil hybrids. The achene density is 374 kg m⁻³, compared with 355 kg m⁻³ for commercial hybrids. Kernel percentage is very similar to commercial hybrids. It is resistant to verticillium wilt caused by Verticillium helianthi (Hansf.) Tubaki & Nishihara. CM 612 has been converted to cytoplasmic male-sterile (cms) form (H. petiolaris, French cytoplasm) by the backcross procedure.

CM 614 and CM 617 are the first lines developed from the North Dakota bird-resistant synthetics BRS1, BRS2, and BRS3, released from the North Dakota Agricultural Experiment Station and USDA in 1984 (Miller, personal communication), and have been converted to cms and restorer forms. They are an improvement in yield, maturity and oil content over the original synthetics.

CM 614 is a line derived from BRS 2 and is a composite of two S1 plants. It flowers ≈1 wk later than HA 89. The achenes are white, with oil content of 39% (which is ≈4% lower than that of HA 89). CM 614 is ≈45 cm taller than HA 89. It is resistant to downy mildew Race 2, caused by Plasmopora halstedii (Farl.) Berl. & de Toni in Sacca, and to verticillium wilt and rust caused by Puccinia helianthi Schwein. CM 614 has been converted to cms form (H. petiolaris, French cytoplasm) by the backcross procedure.

CM 615 was also derived from BRS 2 and is a composite of three F1 plants. It flowers 3 d earlier than CM 614 and is of similar height. The achenes are white with oil content 2 percentage points higher than CM 614. CM 615 has been converted to cms form (H. petiolaris, French cytoplasm) by the backcross procedure. It is resistant to Race 1 of rust, verticillium wilt, and showed some resistance to wilt, caused by Sclerotinia sclerotiorum (Lib.) de Bary.

CM 616 and CM 617 are restorer lines in cms (H. petiolaris, French cytoplasm) background. They were derived from the cross CM 596/BRS 1-1544. BRS 1-1544 is an S1 plant from the BRS 1 synthetic, while CM 596 is an early restorer line released by Agriculture Canada (2). Both lines are composites of three F1 plants with the recessive branching character. CM 616 is ≈30 cm taller than HA 89, while CM 617 is 15 cm taller than CM 616. The achenes of CM 616 are elongated, medium in size, and white in color, while those of CM 617 are oblong, medium in size, and light tan in color. Both are resistant to downy mildew Race 2. CM 617 is resistant to rust Race 1 and to verticillium wilt.

CM 619 is an early, single-headed oilseed restorer line in cms (H. petiolaris, French cytoplasm) background with predominantly convex heads. It is a composite of five F1 plants from the cross RHA 297/3/CMS 497. RHA 297 and CMS 497 were released earlier by USDA (3) and Agriculture Canada (4), respectively. CM 619 flowers about ≈3 d earlier than RHA 297 (3) and is ≈23 cm shorter. It is moderately resistant to downy mildew Race 4 and to verticillium wilt. The medium-size achenes are predominantly black in color and ≈8 percentage points lower in oil content than HA 89.

CM 620 is a single-headed oilseed restorer line in cms (H. petiolaris, French cytoplasm) background. It is a composite of two F1 plants from the cross wild H. annuus/3/Kras 630/CR1100/unknown line. Kras 630 is a selection from the open-pollinated variety ‘Krasnodarets’. CM 620 flowers at about the same time as RHA 274 and produces hybrids with HA 89 that are 8 percentage points higher in oil content but lower in seed yield than public hybrid 894 (= cms HA 89 × RHA 274). CM 620 is ≈40 cm taller than HA 89. The achenes are predominantly black in color. CM 620 is resistant to verticillium wilt and to rust Race 1.

CM 621 is a branching oilseed restorer line in cms background. It is a composite of four S1 plants from a fertile cms RHA 274/3/HA 89. It was probably outcrossed with an unknown restorer line. It flowers ≈1 d later than RHA 274 and is about the same height as CM 620. In combination with HA 89, it produces hybrids with 8 percentage points higher oil but lower seed yield. The achenes are predominantly...