ted for high erucic acid content in the oil using a half-seed technique (2.3). Highest erucic acid selections (>500 g kg⁻¹) from half-seed analyses were selfed over the winter of 1993–1994 in the greenhouse. Seed from each F₄ plant was evaluated for glucosinolate content using a glucose-sensitive Testape procedure (5). Lines with very low Testape scores (<0.5 units, on a scale of 0 to 5) and high oil content (>400 g kg⁻¹) were selected and planted in field trials as single-plant plots in 1994. A further winter seed increase was carried out from F₅ to F₆ seed in 1994–1995. Oil fatty acid profile and seed meal glucosinolate content were re-evaluated after each increase and only plants with desirable quality were retained for replanting.

Breeder seed of Sterling was derived from a single plant selected from the F₆ population grown in the greenhouse in 1994–1995. Seed from the initial selection was grown as F₇ single-plant plots in 1995. Prior to harvest, 30 single-plant selections were identified with desired plant uniformity, oil content, and oil seed meal quality. In 1996, F₈ seed from these 30 plants were grown in single-plant plots. During the growing season, plots were visually inspected and any off-type plants were removed. Before harvest, 20 single-plant selections were taken from each single-plant plot and evaluated for oil fatty acid profile and seed meal glucosinolate content. Four hundred single F₉ plants were selected and their seeds combined to plant foundation seed in 1997.

Agronomic performance of Sterling was compared with the performance of three control cultivars (Hero, Reston, and R.500) over 3 yr (1994, 1995, and 1996) in trials grown in Idaho, Montana, Washington, and Oregon. The 1996 trials were the Pacific Northwest Canola Variety Trials (PNWCVT) (1). Hero and Reston are high erucic acid cultivars developed at the University of Manitoba in Canada. These cultivars account for a high proportion of the Canadian industrial-quality rapeseed acreage. R.500 is a B. rapa (yellow sarson) high erucic acid cultivar with high seed glucosinolate content, that shows poor adaptation to conditions in the Pacific Northwest. R.500 was included as control in the 1994 and 1995 trials because it is the only high erucic acid spring rapeseed cultivar commercially available to U.S. growers.

Averaged over years and sites, seed yield of Sterling was 1658 kg ha⁻¹. Averaged over locations within years, it was 1274, 1901, and 1753 kg ha⁻¹ for 1994, 1995 and 1996, respectively; average yield for the controls was 838, 855, and 1345 kg ha⁻¹ for the same respective years. Sterling had higher seed yield than the highest-yielding control cultivar (Hero) at all sites evaluated.

Average oil content of Sterling was 404 g kg⁻¹, and not significantly different (P < 0.05) from Hero (403 g kg⁻¹), the control with the highest oil content. Average erucic acid content of Sterling was 463 g kg⁻¹, which was significantly higher (P < 0.05) than Hero (423 g kg⁻¹) or Reston (398 g kg⁻¹). Total seed glucosinolate content of Sterling was consistently low, averaging 10.7 mmol g⁻¹ defatted meal.

On average, Sterling plants were 99 cm tall, 5 cm shorter than Hero. Plants begin to flower approximately 54 d after planting (compared with Hero at 54 d and Reston at 59 d), and reached maturity an average of 98 d after planting, which was the same as Hero and 7 d earlier than Reston. Average 1000-seed weight was 3.5 g, not significantly different (P < 0.05) from Hero.

U.S. plant variety protection of Sterling is pending (PVP Certificate no. 9700372). Seed increases are limited to foundation and certified seed classes. Requests for seed of Sterling for commercial production can be made to the Idaho Agricultural Experiment Station, University of Idaho, Moscow, ID 83844-2331. Small amounts of seed for experimental purposes will be available from the corresponding author for at least five years.

References and Notes


6. Dept. of Plant, Soil and Entomological Sciences, Univ. of Idaho, Moscow, ID 83844-2339. Registration by CSSA. Accepted 30 Sept. 1997. *Corresponding author: (jbrown@uidaho.edu).


Registration of ‘Southwest Runner’ Peanut

‘Southwest Runner’ (Reg. no. CV-58, PI 599178) is a runner U.S. market-type peanut (Arachis hypogaea L.) cultivar with moderate resistance to Sclerotinia minor Jagger, the causal organism of sclerotinia blight. Southwest Runner was jointly released by the Oklahoma Agricultural Experiment Station (OAES) and USDA-ARS in 1995. Evaluated experimentally as OK CF83-126, this cultivar traces to a late-generation (F₉) single-plant selection made in 1983 at the Caddo Research Station, Ft. Cobb, OK. The original cross, between the Spanish cultivar Comet (1) and the runner cultivar Florunner (4), was made in 1973 using Florunner as the pollen donor. Neither Comet nor Florunner have appreciable resistance to sclerotinia blight per se; however, Comet usually exhibits a lower incidence, probably due to the Spanish growth habit.

Southwest Runner is intermediate in plant type between typical Spanish and runner cultivars. It exhibits a unique growth habit with robust, prostrate lateral branches and a prominent vertical main stem. The main stem bears flowers, atypical for most runner cultivars. Foliage color and seed testa color are intermediate between its parents, but each is more similar to Comet than to Florunner. Pods are generally typical of the runner type, but pods and seed average 12 to 15% smaller than those of Florunner. Southwest Runner exhibits moderate resistance to sclerotinia blight, comparable to that of the resistant Spanish cultivar Tamspan 90 (6). Southwest Runner is much more resistant to sclerotinia blight than Florunner and ‘Okrun’ (2), the two most widely grown runner cultivars in Oklahoma. Southwest Runner is not susceptible to early leafspot (caused by Cercospora arachidicola S. Hori) than are these two runner cultivars. Preliminary results indicate that Southwest Runner is 7 to 10 d earlier in maturity than Okrun or Florunner in Oklahoma.

Replicated testing of OK CF83-126 began in 1986. Resistance to sclerotinia blight was first noted in the 1990 sclerotinia blight screening nurseries at the Caddo Research Station. From 1991 through 1993, OK CF83-126 was compared with check cultivars in test areas having either a high or low incidence of sclerotinia blight. In total, 33 replicated trials were conducted in Oklahoma comparing OK CF83-126 with one or more of the check cultivars: Florunner, Okrun, Tamrun 89 (5), and Tamspan 90. Southwest Runner equaled the checks in yield, grade, and dollar value when grown in areas free or having low levels of sclerotinia blight. However, in areas having a high incidence of sclerotinia blight, Southwest Runner was superior to the three runner cultivars (3) and was essentially equivalent to the sclerotinia blight-resistant cultivar.

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