Registration of ‘Melakh’ Cowpea

‘Melakh’ cowpea [Vigna unguiculata (L.) Walp.] (Reg. no. CV-140, PI 596353) was developed by the Institut Senegalais de Recherches Agricoles (ISRA) as part of a collaborative project with the University of California, Riverside, and was released by the government of Senegal in 1996. Melakh has resistance to cowpea aphid (Aphis craccivora Koch), cowpea aphid-borne mosaic potyvirus (CABMV), and bacterial blight (caused by Xanthomonas campestris pv. vignicola [Burkholder] Dye) and has early maturity. Melakh is adapted for dry grain and fresh southernpea production under rainfed conditions in the Sahelian Zone of northern Senegal, where the annual monomodal rainfall provides only 200 to 400 mm per growing season.

Melakh was derived from the cross IS86-292/IT83S-742-13, which was made in 1986 in Senegal. IS86-292 is an ISRA breeding line from the same cross as ‘Mouride’ (1) and has high yield potential and resistance to CABMV and bacterial blight. Breeding line IT83S-742-13 was developed by the International Institute of Tropical Agriculture in Nigeria, has resistance to the cowpea aphid, and is early maturing (2). Seedlings of F₁ plants were shown to have resistance to the cowpea aphid using artificial infestation and were bulked. In the F₂ generation, single plants were selected under natural field conditions that had no infestations of cowpea aphid and no symptoms of mosaic virus or bacterial blight. Artificial infestation and inoculation were used to select for resistance to cowpea aphid and CABMV in the F₃ generation.

Seedlings from a single F₆ plant were bulked and introduced in yield trials in Senegal from 1989 through 1992 under the designation of B89-504. Tests were conducted at 4 experiment-station sites per year, and in 1991 and 1992 at 35 on-farm sites per year. Segregation for resistance to bacterial blight was observed, and single plants were selected and screened for resistance in the F₉ and F₁₀ generations using artificial inoculation. During the F₁₁ generation, seedlings of bacterial blight-resistant lines were screened for resistance to cowpea aphid using artificial infestation. Seedlings of resistant lines were bulked to form the final version of Melakh.

Melakh is semierr erect and belongs to the same maturity group as two early-maturing erect cultivars [Bambey 21 (B21) and California Blackeye No. 5 (CB5)] previously recommended for use in Senegal. Under water-limited conditions, Melakh reaches physiological maturity 64 d after sowing. Melakh has an indeterminate growth habit and a greater biomass production than either B21 or CB5, which are more determinate than Melakh when grown in Senegal. Melakh has consistently produced 30% more grain and forage than B21 or CB5 in multifaceted yield trials in Senegal. Seeds of Melakh are white with a brown eye and are comparable in size (19 g 100 seed⁻¹) to those of B21 (18 g 100 seed⁻¹) and CB5 (20 g 100 seed⁻¹). Melakh has resistance to the major strains of CABMV in Senegal and partial resistance to cowpea aphid and bacterial blight, whereas B21 and CB5 are susceptible to cowpea aphid and bacterial blight. In the summer of 1993, seeds of Melakh were prereleased and distributed to about 1000 farmers in 300 villages in southern Senegal by World Vision International, BP 51 Thies, Senegal. On-farm yields of Melakh in solecrops were estimated by World Vision International to be approximately 1000 kg ha⁻¹, which is about three times the national average yield for solocropped cowpea in Senegal.

Breeders seed can be obtained from either ISRA at the Centre National de Recherches Agronomiques, BP 53 Bambey, Senegal, or the corresponding author.

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