Registration of ‘Ali Dayi’ Lentil

‘Ali Dayi’ lentil (Lens culinaris Medik.) (Reg. no. CV-13, PI 631395) was developed at the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, and released by the Central Research Institute for Field Crops (CRIFC), Ankara, Turkey, in 2001. ‘Ali Dayi’, a high-yielding red cotyledon lentil cultivar with lodging resistance, is recommended for spring cultivation in central Anatolia in Turkey.

‘Ali Dayi’, ICARDA accession number ILL 5722, was developed from a cross of ILL 883 by ILL 470. The female parent, ILL 883, is a landrace from Iran, and ILL 470 is a landrace of Syria. The segregating populations were advanced through the bulk method, and single-plant selection was practiced in the F5. The F2:F3 and F2:F5 progenies were evaluated at ICARDA in nonreplicated nurseries. The line was evaluated in replicated preliminary and advanced yield trials in the F4:F5 and F4:F6, respectively. Because of its excellent yield performance and other agronomic attributes, it was selected for the international testing program with the pedigreed number FLIP 88-51 L, and accessed by Genetic Resources Unit of ICARDA as ILL 5722.

The Food Legume Improvement Program of CRIFC, Ankara, Turkey, received ILL 5722 through the Legume International Nursery Network in 1993 in the small-seeded lentil nursery category. It was identified as one of the promising lines for spring planting at Haymana, the main CRIFC research site. Subsequently, the line was evaluated in preliminary and large-plot yield trials at the same location. Because of its higher yield performance, lodging resistance, and desirable seed characteristics, it was selected for multilocation yield evaluations.

From 1997–1998 to 1999–2000, ILL 5722 was evaluated at Haymana, Konya, Yozgut, and Karaman research sites in central Anatolia. On average, seed yield of ILL 5722 was 1490 kg ha\(^{-1}\) compared to 1277 kg ha\(^{-1}\) for the best check, Emre 20, an increase of 17%. Low yields occurred in 1998–1999 because of severe drought. Significantly higher yields were recorded in all the trials, except 1997–1998 at Haymana and in 1998–1999 at Konya and Yozgut.

ILL 5722 attains a height of 30 cm, with first pod height at about 12 cm from the ground level, and exhibits an erect growth habit with at least three upright primary branches. The compound leaves have light pubescence, medium sized leaflets, and a well-developed tendril. Tendrils intermingle with each other and keep the canopy in an upright position and suitable for mechanical harvest. It flowers after 59 d; its flowers are white. ILL 5722 reaches physiological maturity after 89 d with no pod shedding even at complete maturity. Seeds have a brown testa without any pattern and weigh 4.7 g/100 seeds. Cotyledons are red, and protein concentration in ILL 5722 is 25.2 mg g\(^{-1}\) of seeds. Cotyledons are bright red. Protein concentration in ILL 5883.

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3. Hand harvest is a major constraint for lentil production in central Anatolia. On average, seed yield of ILL 5722 was 1490 kg ha\(^{-1}\) compared to 1277 kg ha\(^{-1}\) for the best check, Emre 20, an increase of 17%. Low yields occurred in 1998–1999 because of severe drought. Significantly higher yields were recorded in all the trials, except 1997–1998 at Haymana and in 1998–1999 at Konya and Yozgut.

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The Syrian national program identified ILL 5722 as a line from the Lentil International Nursery (small-seeded lentil) supplied by ICARDA. It was tested in six contrasting environments. The line was entered into the international testing program in 1986 and was designated as ILL 16. Considerable lodging was observed among plants, and a single-plant selection (81S 15) was made at ICARDA in 1981. After nonreplicated preliminary screening nursery and replicated preliminary and advanced yield trials between 1986–1987, it was entered into the international testing program as one of the promising lines in the small-seeded lentil category. The line was entered into the Lentil Germplasm Catalog as accession ILL 5883.

The Syrian national program identified ILL 5883 as a line from the Lentil International Nursery (small-seeded lentil) supplied by ICARDA. It was tested in six contrasting environments. The line was entered into the international testing program in 1986 and was designated as ILL 16. Considerable lodging was observed among plants, and a single-plant selection (81S 15) was made at ICARDA in 1981. After nonreplicated preliminary screening nursery and replicated preliminary and advanced yield trials between 1986–1987, it was entered into the international testing program as one of the promising lines in the small-seeded lentil category. The line was entered into the Lentil Germplasm Catalog as accession ILL 5883.

Vascular wilt is a devastating disease of lentil introductions. Yield losses up to 72% have been reported (Bayaa et al., 1986). ILL 5883 is resistant to vascular wilt, evidenced from plastic house screening in trays (Bayaa et al., 1986) and in wilt-sick plot at Tel Hadaya, Alexandria, Egypt. ILL 5883 had <5% wilted plants compared to 15–20% wilted plants in the local check, Hurani. In on-farm trials in the years across Syria, 2.7% wilted plants have been reported for ILL 5883 compared to 5% for the local check, Hurani.