Registration of ‘Gachsaran’ Lentil
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‘Gachsaran’ lentil (Lens culinaris Medikus) (Reg. No. CV-28, PI 638619) was developed at the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, and released by the Dryland Agricultural Research Institute (DARI), Maragheh, Iran, in 1999. It is an early-maturing, high-yielding, and large-seeded yellow cotyledon cultivar, recommended for autumn planting in mild winter areas of Iran. Gachsaran is being released on the basis of combined resistance to Fusarium wilt, caused by Fusarium oxysporum f. sp. lentis (Vasudeva & Srinivasan) Gordon, and Ascochyta blight (caused by Ascochyta fabae Speg. f. sp. lentis Gossen et al.), which contribute to yield stability.

The Food Legume Improvement Program of DARI, Maragheh, Iran, introduced line ILL 6212 from ICARDA into the 1994 Lentil International Yield Trial (LIYT-Large-seed). ILL 6212 is a breeding line developed at ICARDA from the cross ILL 4349/ILL 4605, made in 1983. The female parent, ILL 4349, is a Canadian line, and the male parent, ILL 4605, is a landrace from Argentina. ILL 4349 is the donor parent for genes conferring resistance to both Fusarium wilt and Ascochyta blight diseases. ILL 6212 was developed following the bulk-pedigree method and was included in the international testing program as FLIP 87-22L. This line was later designated as ILL 6212 in the ICARDA’s Lentil Germplasm Catalog and released under the popular name Gachsaran.

After preliminary selection from the international nursery for desirable agronomic traits, disease reaction, and yield potential ability at the Gachsaran research station, ILL 6212 was tested in a replicated preliminary yield trial in the 1996 crop year. Due to its high yield potential, good seed characteristics, and resistant reaction to Fusarium wilt and Ascochyta blight, it was tested in multilocation trials as “A” and “B” during the 1997 to 1999 crop years. Gachsaran produced an average yield of 2274 kg ha⁻¹ compared with 1829 kg ha⁻¹ for the local check, an increase of 24.3%. Simultaneously, an on-farm trial was performed in farmer’s fields in representative sites of Gachsaran region. On-farm trial results from 1996 to 1999 showed that Gachsaran produced an average yield of 1712 kg ha⁻¹.

Among others, lentil Fusarium wilt and Ascochyta blight are the major biotic stresses limiting lentil production in Iran. Gachsaran was tested under both greenhouse and field conditions for its reaction to these diseases. Under artificial inoculation in the greenhouse, it showed a tolerant reaction to both diseases. However, under field conditions in yield trials and under on-farm evaluations, the cultivar showed a resistant reaction to the diseases.

Gachsaran is a semi-erect variety with a mean plant height of 36 cm. It flowers in 93 d and attains physiological maturity in 137 d, whereas farmers’ cultivars flower in 99 d and mature in 140 d. Its seed has green testa color without pattern. Seed weight is 4.7 g 100−1 seed, compared with 2.0 g for the local cultivars, which is desirable for the farmer and consumer. One important characteristics of Gachsaran is that it has high protein content (27.3%) compared with a local cultivar (21%). Its cooking quality is excellent and takes only 20 min to cook.

The seed of Gachsaran is maintained at DARI, Maragheh, Iran, and at ICARDA, Aleppo, Syria. Small quantities of seed can be obtained from the corresponding author for at least 5 yr from the date of publication. Seed of this release is deposited in the National Plant Germplasm System, where it will be available after 5 yr for research purposes, including development and commercialization of new cultivars. It is requested that appropriate recognition be made if this cultivar contributes to the development of new germplasm or cultivars. Plant variety protection will not be sought for Gachsaran.

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