

Registration of 'Giza 132' Barley

'Giza 132' six-rowed barley (*Hordeum vulgare* L.) (Reg no. CV-329, PI 642786) is a drought-tolerant spring cultivar developed by the Barley Research Department, Agricultural Research Center at Giza, Egypt, and released in April 2006. It was selected for its high yielding capacity under drought stress in the rainfed areas of Egypt.

Giza 132 was derived from an F_3 population received from the International Center for Agricultural Research in the Dry Areas (ICARDA). The pedigree method of breeding was used and Giza 132 originated from the cross Rihane-05//As46/Aths/3/Aths/Lignee 686. Rihane-5 is a long-time check for drought stress used by ICARDA, while Aths is a drought and heat-tolerant cultivar developed by ICARDA. Lignee 686 is a national check having high yielding potential under drought stress in the West Asia and North Africa (WANA) Region. It was selected for drought tolerance and high yielding potential. Plant selections within superior rows of F_3 families were made and seeds from these plants were grown as F_4 plant rows at the Sakha Research Station in the northern Delta Region of Egypt. Spikes from superior families were selected and grown as plant rows for rouging and purification purposes, after which only the best appearing and most uniform lines were combined together and carried forward to the next generation for yield tests.

The first yield trials of Giza 132 were conducted in the 2001–2002 growing season at five research stations: Sakha, Mallawi, Nubaria, New Valley, and Itay El-Barood (representing northern, middle, eastern, and upper Egypt) and at three sites: El-Mathani, El-Negela, and Rafah in the Northcoast region and North Sinai, representing the rainfed areas of Egypt. Giza 132 was further evaluated in replicated preliminary multilocation yield trials grown under different environmental conditions representative of the barley-growing regions of Egypt. In these trials, Giza 132 was statistically ($p \leq 0.05$) superior to the commercial check cultivars, Giza 126 and Giza 2000, in grain yield. Subsequently, Giza 132 was included in large-scale yield trials and in demonstration experiments conducted in farmers' fields along with the two check cultivars, Giza 126 and Giza 2000.

Average data of 22 environments indicated that head emergence occurs 95 d from seeding compared to 105 d for Giza 126 and 95 d for Giza 2000, and maturity is 140 d from seeding compared to 145 d for Giza 126 and 135 d for Giza 2000, depending on the environment (including moisture, soil fertility levels, and level of rainfall). Giza 132 outyielded Giza 126 and Giza 2000 (the two check cultivars) in grain yield by 13.7 and 12.3%, respectively. Average yields of 2365 kg ha⁻¹ have been obtained for Giza 132 under rainfed conditions. In addition

to its yield advantage, Giza 132 has higher 1000-kernel weight (44 g) than the two check cultivars, Giza 126 (42 g) and Giza 2000 (41 g) (average data of 22 environments).

Giza 132 is intermediate (125 cm) in plant height and has good straw strength with high lodging resistance compared with Giza 126 and Giza 2000 with plant heights of 130 and 120 cm, respectively. Juvenile plants have intermediate growth habit. Basal leaf sheaths are pubescent and auricles are white to grayish. The spike of Giza 132 is tapered, medium dense, and semilax. Awns are smooth and longer than the spike. The rachilla is medium in length with moderately long rachilla hairs. Glumes are hairy and about one third of the kernel in length. Stems are slightly waxy with a dark-green color. Leaves are medium green with intermediate width, averaging 19 mm. Giza 132 is widely adapted to Egypt under drought and saline conditions.

Giza 132 was tested for resistance to the major barley diseases occurring in each environment, including net blotch [caused by *Drechslera teres* (Sacc.) Shoemaker], leaf rust (caused by *Puccinia hordei* Otth), and powdery mildew (caused by *Erysiphe graminis* DC f. sp. *hordei* Em. Marchal; syn. *Blumeria graminis* (DC.) E.O. Speer). Giza 132 is moderately resistant to powdery mildew and net blotch but moderately susceptible to leaf rust.

The generation sequence of seed production will be Breeder, Foundation, Registered, and Certified. Breeder seed is being maintained at the Agricultural Research Center at Giza and foundation seed will be maintained at the Sakha and Gemmeiza research stations (northern Delta). Seed of Giza 132 is being increased at two experimental stations in Egypt for dissemination to farmers. Seed will be available from the Barley Research Department, Agricultural Research Center, Giza, Egypt.

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