REGISTRATION OF GENETIC STOCKS

REGISTRATION OF EIGHT SUGARBEET TRISOMIC GENETIC STOCKS

EIGHT PRIMARY TRISOMIC SUGARBEET (Beta vulgaris L) genetic stocks (Reg. no. GS-1 through GS-8, PI 540886 through PI 540893) were released by the USDA-ARS in 1990. The trisomic stocks were developed from an ARS inbred, NB1 (2), in a joint project between the USDA-ARS and Consejo Superior de Investigaciones Científicas (CSIC), Spain.

The eight primary trisomic (2x + 1 = 19) stocks (Triplo 1, 2, 3, 4, 5, 7, 8, and 9) were developed from the diploid (2x) and tetraploid (4x) of inbred NB1, which had been developed by the USDA-ARS at Salinas, CA. Although all nine trisomic types were identified (4), the type that was trisomic for Chromosome 6 (Triplo 6) could not be sexually or asexually propagated. Hence, it is not among those being released. NB1 is multigerm green hypocotyl, self-fertile, and lacking in vigor. Triploids (3x) were produced from 4x × 2x crossed. Both annual and biennial types of NB1 (2x) were then used in the triploid × diploid (3x × 2x) crosses from which the trisomic types (2x + 1) were identified and isolated. Hence, the trisomics exist either as slow-bolting annuals or as biennials. They require 40 and 125 d of photothermal induction, respectively, to induce flowering in the leaf-whorl tissue, but is moderately susceptible to leaf sheath and collar feeding by the second-generation corn borer. Plant health is good for Iowa conditions and tolerance to climatic stress is excellent such that stay-green is maintained until maturity.

Inbred B94 has shown its best hybrid performance when crossed with inbred Mo17 (Iowa Agriculture Experiment Station strain). Evaluations in 31 location–year environments in south-central and southern Iowa showed that B94 × Mo17 yielded similarly to B73 × Mo17 and had 8 g more harvest grain moisture. The incidences for root lodging and stalk lodging were 4.2 and 2.0 percentage points less, respectively, for B94 × Mo17 than for B73 × Mo17. Inbreds B73 and B94 are not related lines; the cross of B73 × B94 shows good hybrid vigor. The maturity classification for B94 is AES800.

NB1 is multigerm green hypocotyl, self-fertile, and developed by the USDA-ARS at Salinas, CA. Although all nine trisomic stocks were developed from an ARS inbred, NB1 is relatively tall plant, but moderate ear height at 65 cm. Kernels are relatively thick, greater in depth than width, very shallow dent, and intermediate yellow. The seed has good quality and has 10% greater weight than B73. The cob is red, the ear is slightly longer than for B73, and has 16 to 18 rows of kernels. The seed yield is not as high as for B73. Under artificial infestations of first-generation European corn borer, the line has good resistance to larval feeding in the leaf-whorl tissue, but is moderately susceptible to leaf sheath and collar feeding by the second-generation corn borer. Plant health is good for Iowa conditions and tolerance to climatic stress is excellent such that stay-green is maintained until maturity.

Inbred B94 has shown its best hybrid performance when crossed with inbred Mo17 (Iowa Agriculture Experiment Station strain). Evaluations in 31 location–year environments in south-central and southern Iowa showed that B94 × Mo17 yielded similarly to B73 × Mo17 and had 8 g more harvest grain moisture. The incidences for root lodging and stalk lodging were 6.2 and 4.0 percentage points less, respectively, for B94 × Mo17 than for B73 × Mo17. Inbreds B73 and B94 are not related lines; the cross of B73 × B94 shows good hybrid vigor. The maturity classification for B94 is AES800.

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References and Notes
