BGS 118, Low number of tillers 1, Lnt1

Stock number: BGS 118  
Locus name: Low number of tillers 1  
Locus symbol: Lnt1

Previous nomenclature and gene symbolization:

Reduced number of tillers = rnt (7).  
Intermediate spike-l = int-l (6).

Inheritance:

Monofactorial recessive (7).  
Located in chromosome 3HL (7); Lnt1.a is about 30.5 cM distal from the uzu1 (uzu 1) locus (7, 8); Lnt1.a mapped about 7.8 cM from SSR marker GBM1043 in 3HL (4); Lnt1.a was not associated with any SNP markers in the Bowman backcross-derived line BW494 (2); int-l.81 is associated with SNP markers 2_1517 to 2_1405 (positions 158.21 to 187.28 cM) in 3H bins 11 to 12 of the Bowman backcross-derived line BW428 (2), in 3H bin11 (1).

Description:

The tiller number is reduced to 2 to 4 per plant. These tillers are formed soon after seedling emergence; hence, no late-emerging tillers are observed. Culms are thick, and stiff and leaves are dark green (7). Plant mutants at the Lnt1 locus fail to produce secondary tillers (1). Occasional spike malformations occur in most environments. The spike may have irregular rachis internode lengths and is relatively short. The lower portion of the spike appears more compact than the upper portion (1, 6). Lateral spikelets in two-rowed cultivars are enlarged and have a pointed apex. Plants homozygous for a recessive allele at the Lnt1 locus headed slightly earlier than normal sibs (6). Compared to Bowman, the grain yields of the backcross-derived lines for Lnt1.a (BW494) and int-l.81 (BW428) were about 10% of those of Bowman. Kernels were longer and wider and weighed up to 20% more (3). Double mutant plants with the Lnt1.a and int-b.3 (intermediate spike-b) genes produced uniculm plants (1). The Lnt1.a gene showed an epistatic interaction with high tillering mutants gra-a.1 (granum-a) int-m.85 (intermediate spike-m), mnd1.a (many noded dwarf 1) and mnd6.6 (many noded dwarf 6), producing double mutant plants with 2 to 3 tillers (1). Reduced transcript levels for Contig12274, Bell-like homeodomain protein (JuBel2) in Lnt1.a plants and co-segregation with JuBel2 were observed (1).

Origin of mutant:

A spontaneous mutant in the hybrid Chikurin Ibaragi 2/Miho Hadaka (7).

Mutational events:

Lnt1.a (GSHO 833) in Mitake (OUI408) (7); int-l.81 (NGB 115499, GSHO 1771) in Bonus (NGB 14657, PI 189763) (3, 6); Lnt1.b (FN468, GSHO 3678) in Steptoe (CIho 15229) may be an allele based on phenotypic similarity (5).

Mutant used for description and seed stocks:

Lnt1.a (GSHO 833) in Mitake; int-l.81 (NGB 115499, GSHO 1771) in Bonus; Lnt1.a in Bowman (PI 483237)*8 (GSHO 1984, BW494, NGB 22157); int-l.81 in Bowman*6 (GSHO 1961, BW428, NGB 22152).
References:


Prepared:


Revised:

Single Low number of tillers 1 (Int1.a) spikelets
Low number of tillers 1 (Int1.a) plant with only three tillers to the left compared with normal Bowman
Two Low number of tillers 1 (Int1.a) spikes to the left compared with normal Bowman
Close-up picture of 2 Low number of tillers 1 (Int1.a) spikes to the left compared with normal Bowman