

'Mountain Belle' Cherry Tomato; NC 1C and NC 2C Cherry Tomato Breeding Lines

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'Mountain Belle' is a determinate cherry tomato [*Lycopersicon esculentum* var.

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cerasiforme (Dunal.) A. Gray] F₁ hybrid with a desirable combination of plant, fruit, and disease resistance characteristics. 'Mountain Belle' and its parent lines, NC 1C and NC 2C, were developed at the Mountain Horticultural Crops Research Station, Fletcher, NC.

Origin

NC 1C, an inbred line in the F₅ generation, resulted from backcross breeding to incorporate the *j-2* gene for jointless pedicel and *Ve* gene for verticillium wilt resistance into the cherry tomato line NY 402. Three backcrosses were made to NY 402. Selfing followed each

backcross to identify segregates carrying the *j-2* and *Ve* genes and to select for NY 402 type (Fig. 1).

NC 2C, an inbred line in the F₇ generation, resulted from a cross between the F₁ hybrid 'Castlette' and 'Mini Rose'.

'Mountain Belle' is the F₁ hybrid of NC 1C x NC 2C. 'Mountain Belle' was tested in North Carolina and several other states as NC 8642D.

Description

NC 1C. Plant type is determinate (*sp*) with an open growth habit and slight adaxial leaf curl similar to NY 402. Fruit are round and separate easily from the jointless pedicels without tearing at the stem end. Ripe fruit are firm (subjective ratings) and hold well on the vine without cracking or bursting. Nonripe fruit are uniformly light green (*u* gene). They ripen to a uniform red, free of the yellow shoulder defect. Fruit have two locules; the gel of ripe fruit is yellow.

NC 1C yield was significantly less than that of other entries in replicated trials in 1988 and 1989 (Table 1). Early yield was similar to that of 'Cherry Grande' and higher than those of other entries in 1988. Fruit size is very uniform and ranges from 2.5 to 3.8 cm in diameter (average 3.2 cm) (Table 2).

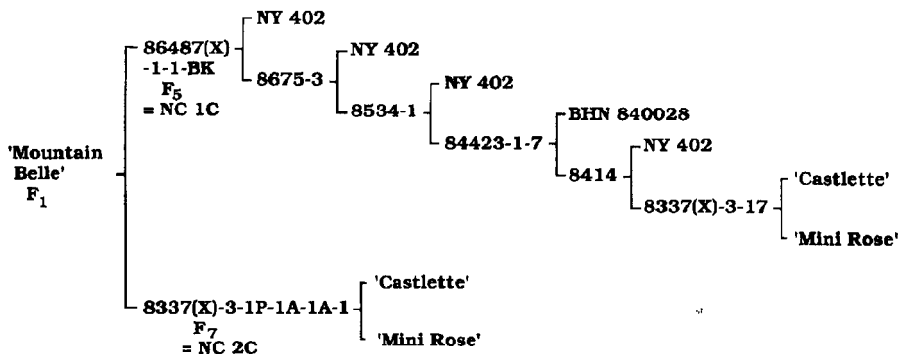


Fig. 1. Pedigree of 'Mountain Belle' cherry tomato and its parent lines, NC 1C and NC 2C.

Table 1. Yield of nonpruned, staked cherry tomatoes grown at Fletcher, N.C.

Cultivar or line	Early season (t·ha ⁻¹)				Total season (t·ha ⁻¹)			
	1986	1987	1988	1989	1986	1987	1988	1989
Cherry Grande	17	57	31	20	70	78	98	85
Castlette	7	39	12	7	77	109	104	82
Mountain Belle	11	41	26	14	69	80	102	86
NC 1C	---	---	32	13	---	---	81	63
NC 2C	7	37	14	8	71	106	108	75
LSD (0.05)	2	5	4	3	6	9	12	11

--- No data obtained.

NC 1C's resistance to race 1 of *Verticillium dahliae* Kleb. (verticillium wilt) is conferred by the single dominant gene *Ve*.

NC 2C. Plant habit is determinate (*sp*). Plant growth is vigorous and provides excellent foliage cover for the fruit. Plant height has been acceptable when grown nonpruned on stakes.

Fruit are round to slightly ovate in shape. Fruit pedicels are jointless, and fruit separate easily from them. Nonripe fruit are uniformly light green (*u*) and have a glossy finish; ripe fruit are bright, glossy uniform red. Fruit have two locules; the gel of ripe fruit is yellow. NC 2C fruit size is uniform, desirable, and maintained throughout the plant (Table 2). Few fruit exceed 3.8 cm in diameter.

In replicated trials conducted over 4 years, NC 2C produced excellent yields (Table. 1). Fruit mature later than that of 'Cherry Grande' and at the same time as that of 'Castlette' (Table 1).

NC 2C has the I gene, which confers resistance to race 1 of *Fusarium oxysporum* f. sp. *lycopersici* (Sacc.) Snyder & Hans (fusarium wilt).

'Mountain Belle'. Plant habit is determinate and slightly more vigorous than 'Cherry Grande'. 'Mountain Belle' has produced well when grown nonpruned on stakes and has not shown the excessive vigor of 'Castlette'. Foliage cover is similar to that of 'Cherry Grande'.

Fruit are round to slightly ovate. Immature fruit are uniform green (*u*), in contrast to the dark-green fruit shoulder of 'Cherry Grande' and 'Castlette'. 'Mountain Belle' fruit have two locules and ripen to a uniform bright red, free of the yellow shoulder defect that sometimes occurs on 'Cherry Grande' and 'Castlette'. 'Mountain Belle' fruit flavor is superior (subjective ratings) to that of 'Cherry Grande' and 'Castlette'.

Fruit pedicels are jointless, and fruit separate easily from them without tearing at the stem end. The jointless pedicel provides an advantage in harvest, since the pedicel stays on the plant and does not have to be removed from the fruit after picking.

In replicated yield trials conducted over 4 years, 'Mountain Belle' had total yields equivalent to 'Cherry Grande'. 'Mountain Belle' yields were equivalent to those of 'Castlette'

in 1988 and 1989 but were significantly lower than those of 'Castlette' in 1986 and 1987 (Table 1).

'Mountain Belle' fruit diameter ranges from 2.5 to 3.8 cm and averages 3.2 cm (Table 2). Uniform fruit size is maintained throughout harvest. Fruit size is smaller and more uniform than that of 'Cherry Grande'. 'Cherry Grande' fruit diameter often exceeds 3.8 cm (Table 2), which is undesirable and sometimes unacceptable in the market.

'Mountain Belle' fruit matures slightly later than that of 'Cherry Grande' but generally earlier than 'Castlette' (Table 1). Harvest period is ≈6 weeks-similar to that of 'Cherry Grande'. Yield during this period is distributed more uniformly than with 'Cherry Grande', which often has a heavy peak harvest over 1 to 2 weeks (data not presented).

'Mountain Belle's resistance to race 1 of *V. dahliae* (verticillium wilt) is conferred by the single dominant gene *Ve* in NC 1C. Its resistance to race 1 of *F. oxysporum* f. sp. *lycopersici* (fusarium wilt) is conferred by the single dominant gene I in NC 2C.

Use

'Mountain Belle' has shown good acceptability in comparison with 'Cherry Grande' in grower trials in North Carolina. 'Mountain Belle's earlier maturity and less vegetative growth make it more desirable than 'Castlette'. It is widely adaptable and has produced well in observational trials in Florida, several other eastern states, and in Ontario.

NC 1C and NC 2C are not intended for direct use as cultivars. NC 1C should prove useful to other breeders because of the addition of the *Ve* and *j-2* genes into a NY 402 background. NC 2C should be useful because of its desirable fruit and plant characteristics and its high yield. Plant Variety Protection Certificates for NC 1C and NC 2C have been granted.

Availability

'Mountain Belle' was released on an exclusive basis to Rogers NK Seed Co. Small samples of 'Mountain Belle', NC 1C, and NC 2C for trial and breeding purposes are available from R.G.G., Mountain Horticultural Crops Research Station, Fletcher, NC 28732.

Table 2. Fruit size of nonpruned, staked cherry tomatoes grown at Fletcher, N.C.

Cultivar or line	Fruit in diam category (%)											
	2.5-3.2 cm				3.2-3.8 cm				>3.8 cm			
	1986	1987	1988	1989	1986	1987	1988	1989	1986	1987	1988	1989
Cherry Grande	6	8	10	4	46	48	58	40	48	43	32	56
Castlette	22	29	33	17	70	61	61	68	8	7	4	14
Mountain Belle	50	46	37	23	50	48	61	70	0	4	3	5
NC 1C	---	---	48	47	---	---	51	52	---	---	0	0
NC 2C	18	34	25	28	69	58	66	66	13	6	7	4
LSD (0.05)	9	9	6	10	7	7	6	7	3	6	4	7

--- No data obtained.