Table 3. Comparison of raspberry cultivars for fruit quality traits at Excelsior, Minn. (1983–85).*

Cultivar	Attractiveness	Color	Firmness	Skin strength	Flavor
Nordic	7.7	7.0	6.3	6.7	7.0
Boyne	7.0	6.3	5.3	6.0	6.3
Reveille	7.6	7.0	6.0	6.0	6.0
Newburgh	6.3	6.3	4.6	5.3	8.0
Haida	8.3	7.6	8.0	7.0	7.0
Canby	7.6	7.3	6.6	7.3	7.3

*Rating scale for each trait is 1 = very poor to 9 = excellent. Fruit were rated in the field by J.J.L. between 15–25 July each year at Excelsior, Minn.

at Excelsior on five dates in 1975 (10 shoots per cultivar in single plots), no aphids were observed on 'Nordic', while known susceptible genotypes, such as 'Fallred', 'September', and 'Boyne', had 8 to 50 aphids per shoot. In another experiment, reproduction of the aphid was monitored on several cultivars. The number of aphids in a saran enclosure placed over each cane tip were counted 6 days after one aphid was placed in each enclosure on each of three dates (three replications per date). 'Nordic' had 0.4 aphids/cane tip, which was similar to 'Reveille' (0.2 aphids/cane tip)—a known resistant cultivar (Daubeny, 1972), and significantly lower ($P \leq 0.05$) than the known susceptible cultivars (Kennedy et al., 1973) Latham (7.2 aphids/cane tip) and Fallred (4.8 aphids/cane tip). The dominant *Ag*₁ gene derived from 'Lloyd George' is the only gene in existing cultivars that is known to confer immunity to *A. agathonica* (Jennings, 1988), although other sources of resistance have been described (Daubeny, 1972; Daubeny and Stary, 1982). If 'Nordic' is indeed resistant or immune, some other gene(s) or types of gene action apparently confer the resistance.

Adaptabilities and uses

'Nordic' appears to be well-adapted to all of Minnesota and probably the surrounding region. In addition, 'Nordic' may be useful as a primocane-fruited cultivar in areas south of Minnesota, where a cultivar that is later than 'Heritage' may be desired. 'Nordic' should be suitable for pick-your-own or local fresh-market production. For processing uses, 'Nordic' likely will be similar to 'Boyne', which has been an excellent cultivar for local processing (Brooks and Olmo, 1972). Frozen packs of 'Nordic' fruit [four fruit : one sugar (w/w)] were rated similar to those of 'Boyne' for appearance, texture, and flavor by trained sensory evaluation panels (data not presented).

Availability

'Nordic' is propagated by cooperating nurseries under a royalty agreement with the Minnesota Nurserymen's Research Corporation. A list of nurseries propagating 'Nordic' can be obtained from J.J.L.

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'Cascade Giant' Pole Bean

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'Cascade Giant' is a pole bean (*Phaseolus vulgaris* L.) developed for home garden use, especially in areas where the old pole bean 'Oregon Giant' is adapted. 'Oregon Giant' has been established in the home-garden seed trade for 70 years or more, especially in the Pacific Northwest, and has a following of gardeners who favor its mild-flavored, flat but fleshy, stringy pods and pole growth habit. Initially, our breeding objective was to develop a stringless 'Oregon Giant'. 'Cascade Giant' pods are stringless and, in addition, round in cross section and considerably longer than 'Oregon Giant', but generally have the purple mottled color and flavor of the old cultivar.

Origin

'Cascade Giant' was tested as OSU 5398, an F₇ selection from a pedigree breeding program started in 1981 with the cross 'Oregon Giant' × 'Oregon Trail' (Fig. 1). 'Oregon Trail' is a bush bean of 'Blue Lake' type with a relatively large pod and was released by the Oregon Agricultural Experiment Station (OAES) (Baggett et al., 1984). Included in the background of 'Oregon Trail' were three OAES bush 'Blue Lake' processing cultivars; 'Bush Blue Lake 290', developed by the Asgrow Seed Co.; and 5996, devel-

oped for bean yellow mosaic virus resistance by the U.S. Dept. of Agriculture, Prosser, Wash. (Fig. 1).

Description

'Cascade Giant' is indeterminate and climbing in growth habit, bearing a relatively heavy crop of basal pods. A first harvest of pods at Corvallis, Ore., would be ready ≈80 days from mid-May planting. The pods (Fig. 2) are nearly round in cross section when mature, measuring at prime maturity ≈10 mm wide × 12 mm deep (suture to suture). When overmature, pods become more broad than deep (creaseback) in cross section, ≈15 mm wide × 13 mm deep. 'Cascade Giant' pods often reach 25 to 28 cm and occasionally 30.5 cm in length. They are smooth when young and up to prime maturity, but become bumpy when overmature. Pods are medium green when young, becoming grayish-green with purple streaks and blotches. The purple pigmentation disappears when the pods are cooked. The pods are stringless, fleshy, and free from noticeable fiber until they are overmature and knobby and begin to become pithy. We judge cooked flavor to be mild. The pod spur is short and curved. Full-size pods contain about eight seeds that are 1.75 cm long and tan to purplish with black stripes and spots. Seed count is ≈2080 kg.

For comparison, 'Oregon Giant' pods are 19 to 21 cm at maximum length, flat but thick, 15 mm wide × 20 mm deep, stringy, and very knobby. The color and flavor of 'Oregon Giant' and 'Cascade Giant' are similar.

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Fig. 1. Pedigree of 'Cascade Giant' pole bean.

Fig. 2. 'Cascade Giant' pods, showing a range of useable sizes.

Germination of 'Cascade Giant' can be poor in cold, encrusted soils, and early runner growth tends to be slower than that of 'Oregon Giant'. Yields of 'Cascade Giant' in multiple-harvest plot trials have been $\approx 20 \text{ t} \cdot \text{ha}^{-1}$. Neither 'Cascade Giant' nor 'Oregon Giant' are immune to bean common mosaic virus. In the field at Corvallis, symptoms of this virus have been distinctly less severe in 'Cascade Giant' than in 'Oregon Giant'. Pod size and production on infected plants of 'Cascade Giant' do not appear to be significantly affected.

Availability

'Cascade Giant' has been released as a public cultivar. Requests for trial seed, samples, or inquiries concerning stock seed should be directed to J.R.B.

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