'Rosita' Ornamental Hazelnut

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'Rosita' is a new red-leafed hazelnut (*Corylus L. hybrid*) cultivar for the ornamental market. It was released by the Oregon Agricultural Experiment Station in Apr. 1999. Compared to other red-leafed ornamental hazelnut cultivars, 'Rosita' has a more desirable upright but compact growth habit and darker leaf color, and the leaf edges have a ruffled appearance. 'Rosita' produces few catkins and nuts. It has moderate resistance to eastern filbert blight (EFB) caused by *Anisogramma anomala* (Peck) E. Müller and big bud mites (primarily *Phytoptus avellanae* Nal.). 'Rosita' is the first ornamental cultivar to be released by the Oregon State Univ. (OSU) hazelnut breeding program.

Origin

'Rosita', tested as OSU 349.040, resulted from a controlled cross of two red-leafed selections, *Corylus avellana* OSU A-28 × *C. hybrid* USOR 24-82, made in 1984 by Maxine Thompson and David Smith (Fig. 1). Four seedlings from this cross were planted in the field, and only OSU 349.040 had a compact growth habit. Scions were grafted onto *Corylus columna* L. seedlings in 1989, and a self-rooted tree was produced by layerage the same year. The two grafted trees and one self-rooted tree were planted for further observation in the border rows of a replicated yield trial in Spring 1990, near self-rooted trees of the red-leafed *C. avellana* 'Rode Zeller' (syn. 'Rote Zellernuss'), 'Purple Aveline', 'Ruby', and 'Fusco-rubra'. The parent OSU A-28 resulted from open pollination of 'Barcelona'. Its vigor and morphology suggest that 'Rode Zeller', rather than 'Fusco-rubra', was the pollen parent. These were the only two red-leafed cultivars in the collection at that time. 'Rode Zeller', an old German cultivar, is vigorous and upright to spreading in growth habit, has large catkins and relatively dark red pigmentation in the bud scales, catkins, husks, and leaves (Beijerinck, 1950). 'Fusco-rubra', another old European cultivar, is a much smaller tree with thin shoots and a somewhat drooping growth habit, small catkins, and light red pigmentation. It was listed as 'Rotblättrige Waldnuss' and described by Goeschke (1887). USOR 24-82, a full sib of *C. hybrid* 'Ruby', was selected in 1982 from a group of seedlings from a cross

of selection 'Chinese Trazel Gellatly #4' and 'Fusco-rubra' made by Harry Lagerstedt as part of his U.S. Dept. of Agriculture program to develop a red-leafed hazelnut rootstock (Lagerstedt, 1990). 'Chinese Trazel Gellatly #4' is reportedly a hybrid of the tree species *Corylus chinensis* Franch. and *C. avellana*, the multi-stemmed European hazelnut of commerce. However, its morphology is more typical of a *C. columna* × *C. avellana* hybrid. Hence, 'Rosita' has a complex pedigree involving two hazelnut species and two different sources of red leaf color. The controlled cross that resulted in 'Rosita' was designed to produce seedlings homozygous for red pigmentation with more intense red leaf color and better color retention in the summer. USOR 24-82 lacks the *S_a* allele present in most red-leaf selections (Thompson, 1985) and therefore the cross was compatible.

Description

'Rosita' was selected because of its desirable upright but compact growth habit and dark leaf color. The leaves of 'Rosita' are dark maroon early in the season but the color gradually fades to dark green by midsummer. All known red-leaf hazelnut cultivars exhibit this phenomenon, but 'Rosita' has better color retention and darker red color, based on our observations. For red-leaf hazelnuts, the more vigorous the shoot growth and the cooler the ambient temperature, the more intense is the red leaf color and the longer it lasts. The leaves also have a distinctive doubly dentate margin and the entire leaf blade is somewhat rippled, producing a frilly appearance. The leaves tend

to be larger and rounder than those of other red-leafed varieties. The buds are large and obtusely pointed, with dark red bud scales.

'Rosita' is similar in trunk cross-sectional area to 'Rode Zeller' and 'Ruby', yet its crown width and height are less, reflecting its vigorous yet compact growth habit (Table 1). 'Rosita' produces fewer long side branches than does 'Rode Zeller' or 'Ruby' (Lagerstedt, 1990), resulting in a more upright growth habit, and giving a round crown in contrast to the spreading habit of 'Rode Zeller', the drooping habit of 'Fusco Rubra', or the leggy, asymmetrical, twiggy growth of 'Ruby'. This branching characteristic of 'Rosita' reduces the amount of pruning needed to maintain a desirable appearance in a landscape.

'Rosita' is not precocious. Nuts were first produced on the original seedling 3 to 4 years later than on most *C. avellana* seedlings of the same age. Our grafted 'Rosita' trees first produced nuts in 1993 and subsequently bore female flowers every year, but the number of catkins is so few that 'Rosita' is functionally male-sterile. The scarcity of catkins is a deficiency of 'Rosita', because the catkin display during flowering in midwinter is an excellent feature of other ornamental hazelnuts. 'Rosita' nuts are medium-small in size, round to oval in shape, and have thick shells. Nut production is an insignificant consideration for an ornamental hazelnut, and none will be produced unless a second, compatible cultivar planted nearby supplies pollen.

Eastern filbert blight is endemic to the eastern United States and is now present in western Washington and the northern Willamette Valley of Oregon. 'Rosita' was included in one test to evaluate its susceptibility. Potted trees were exposed to inoculum under structures topped with diseased wood in Spring 1994, and cankers were counted and measured in Jan. 1996. Average canker length for 'Rosita' was significantly lower than the moderately susceptible *C. avellana* 'Barcelona' and 'Hall's Giant', but higher than the highly resistant 'Tonda di Giffoni' (Table 2). Based on this and tests of other red-leafed cultivars, 'Rosita' appears to be no more susceptible to EFB than the currently available red-leafed cultivars (data not shown). The susceptibility

Fig. 1. Pedigree of 'Rosita' hazelnut.

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Table 1. Tree size of 'Rosita' and four other red-leaved hazelnut cultivars. Trees planted in Spring 1990 and measured in late 1996. Trees are self-rooted unless grafting onto a rootstock is indicated.

Selection	No. trees	Trunk diam (cm)	TCA ² (cm ²)	Height (m)	Crown width (m)
Rosita	1	9.2	14.4	2.90	3.20
Rosita/columna ³	2	11.7	18.3	---	---
Fusco-rubra	1	4.7	7.4	1.98	2.13
Purple Aveline	1	5.3	8.3	---	---
Rode Zeller	2	11.0	17.3	3.66	4.27
Ruby/Newberg	1	10.0	15.7	3.96	3.66

²TCA = trunk cross-sectional area, calculated from trunk diameter measured at 30 cm above the ground line.

³Rootstock is *C. columna* L., the Turkish tree hazelnut.

Table 2. Results of exposing potted hazelnut trees to eastern filbert blight.²

Selection	No. of trees		Mean canker length ³
	Exposed	Infected	
Ennis	13	13	12.43
Casina	13	13	9.84
Barcelona	13	12	9.24
Hall's Giant	12	12	7.89
Willamette	13	12	6.66
Rosita	6	5	4.50
Gem	13	4	1.33
Tonda di Giffoni	12	3	0.60
LSD (5%)			1.90

²Trees were exposed in Spring 1994 and cankers measured in Jan. 1996.

³Canker lengths were measured in cm and then summed for each tree. A square root transformation was used to remove the association between mean and variance. Canker lengths are shown on the square-root scale.

of 'Rosita' to bacterial blight, caused by *Xanthomonas campestris* pv. *corylina* is unknown, but no trees under evaluation have succumbed to this disease. Susceptibility to big bud mites (principally *Phytoptus avellanae* Nal.) was rated in December for incidence of blasted buds on a scale of 1 (= no blasted buds)

to 5 (= many). Over a period of 3 years (1992–94), the average rating was 2.4 for 'Rosita', indicating slightly fewer or less conspicuous blasted buds than 'Fusco-rubra' (rating 3.3), 'Rode Zeller' (rating 3.0), 'Purple Aveline' (rating 3.0), and 'Ruby' (rating 2.7). In the same trial, the average rating was 1.3 for the

highly resistant 'Barcelona' and 4.7 for the highly susceptible 'Tonda Gentile delle Langhe'. 'Rosita' should not suffer significant loss in ornamental value due to bud mite infestations and spraying to control this pest is unnecessary.

Propagation and availability

'Rosita' is easily propagated by grafting using a hot-callusing system (Lagerstedt, 1981). It forms a good graft union with either Turkish tree hazelnut (*Corylus columna*) seedlings or 'Dundee' or 'Newberg' clonal hybrid rootstocks (Lagerstedt, 1990). It has not rooted consistently well by tie-off (strangulation) layerage (Bergougnoux et al., 1978). 'Rosita' was released as a public cultivar, and may be propagated with no restrictions. Limited quantities of scion wood may be obtained by writing to the authors.

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