

Clone selection in the *Lonicera tatarica* complex

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Abstract: Old clones of *Lonicera tatarica* L. were registered in four places in Finland in order to find beautiful, hardy and healthy clones. The number of registered clones was 90; the 14 best clones were selected for further investigations. Seven of the selected clones were *L. tatarica*, four with red flowers and three with white flowers. Six of the clones were *L. x bella* Zabel and one *L. x notha* Zabel. Many of the clones registered as *L. tatarica* proved to be hybrids; these hybrids were, however, often as valuable as ornamentals as *L. tatarica*. *L. tatarica* proved variable and susceptible to pests and pathogens, and it also seemed to hybridize readily with other species. Because of these facts clonal selection of *L. tatarica* clones in cultivation is justified. The real value of the 14 selected clones of the *L. tatarica* complex will be detected in a clone selection trial.

Index words: *Lonicera tatarica*, *Lonicera x bella*, *Lonicera x notha*, honeysuckles, clone selection, woody ornamentals, hybridization

Introduction

Lonicera tatarica L. is one of the oldest ornamentals in Finland (PARVELA 1930). It is hardy in the whole country and it is nowadays one of our most common ornamental shrubs (KALLIO 1966). It is often considered the most valuable species of the genus (eg. WYMAN 1954). As an ornamental, *L. tatarica* has, however, many weaknesses. The species is very susceptible to plant diseases and pests (BRANDER 1978). It is also so variable that only the best forms should be selected (BEAN 1973). Habit of growth, flower size and

colour, leaf size, health and growing value of the plants vary from one plant to another (GREEN 1966). Especially when propagated from seed, this variation is easily seen in the characters of the planting material.

Cultivation apart, hybridization has been very intensive in the group around *L. tatarica* (the *L. tatarica* complex). Back-crossing and triple hybridization have also taken place and the result today is that many honeysuckles resembling *L. tatarica* are hybrids. These hybrids are often valuable ornamentals but difficult to identify because they resemble each other so much. The main difference between

L. tatarica and its hybrids is that *L. tatarica* is glabrous and its hybrids more or less hairy. (GREEN 1966) It has been evident that also in Finland many bushes cultivated as *L. tatarica* in old plantings and nurseries are hybrids.

Because of these problems the genus *Lonicera* was the first one to start with in order to improve the quality of the nursery stock in Finland by using selected clones for mother plants. The research was suggested and financed by the Production Unit for Healthy Plants, Agricultural Research Centre. The aim was to register *L. tatarica* clones and to collect beautiful, healthy and hardy ones. Another aim was to study the variation in the *L. tatarica* complex, to see if there are many hybrids in cultivation and to find the growing value of these hybrids. The research was done in summer 1983 and, as a result, 14 clones of the *L. tatarica* complex were selected and propagated for further investigations. Seven of these clones were real *L. tatarica* and seven were hybrids.

Material and methods

In order to find beautiful, hardy and healthy *L. tatarica* clones, bushes in old plantations of four cities, Helsinki (60° 14' N), Turku (60° 26' N), Tampere (61° 30' N) and Oulu (65° 00' N), were studied (Figure 1). The research was suggestive of the Danish preliminary tests (BRANDER 1982) and the Norwegian clone collecting phase (HORNTVEDT 1979), where clones were selected for final clone selection tests.

At first the clones were located. The following step was the registration of the characters of different clones several times during the summer. Registration gave knowledge of the variation and characters of the *Lonicera tatarica* complex and the best clones were selected and propagated (Figure 2). However, most of the bushes were merely located; only the clones with growing value of any kind were registered as well. All the different clones were registered no more than once.

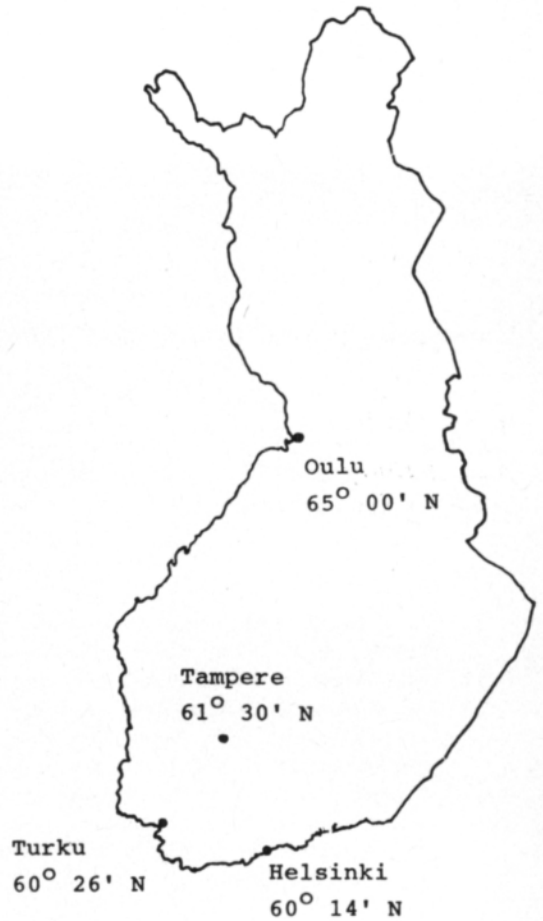


Figure 1. Locations visited during the present study.

LOCATION OF THE BUSHES

- registration of the growing place
- numbering of the clones

REGISTRATION OF THE CHARACTERS

- morphological characters
- growing value

SELECTION OF CLONES

- propagation

Figure 2. Scheme of the research

Registration of characters was done four times in Helsinki and twice in the other places. In Helsinki plants were registered before leafing, during flowering, in mid-summer, and in

Table 1. Morphological characters registered.

Part of plant	Character
Leaves	* Leaf shape
	* Apex shape
	* Base shape
	* Gloss
	* Length (cm)
	* Width (cm)
Flowers	* Length of the corolla tube (mm)
	* Colour
Berries	* Size mm Ø
	* Gloss

autumn while the berries were ripe. In the other places plants were registered during flowering and in autumn.

The following characters were registered: size, habit of growth, leaves, flowering, berries, health and general impression during the summer. The registration was split into two parts. The first part was measurable characters, where morphological characters of the clones were divided into categories by type (Table 1), and the second part was estimated characters (growing value registered by points) (Table 2). All the clones were described in words as well.

Because the registered clones were growing under different conditions, the most promising clones were not always the ones with the highest possible growing value points. Therefore the selected clones were the ones which were presumed to be valuable when growing under favourable conditions. As in Denmark in corresponding researches (BRANDER 1982), the most important character in selection was, however, health. The aim of the selection was to select as many different valuable types of flowering, habit of growth etc. as possible.

Herbarium samples were taken of all the registered clones. The determination of the species was afterwards based on these samples. Herbarium samples are preserved in the collections of the Botanical Museum of Helsinki University. The fungus samples were identified at the Department of Plant Pathology, Agricultural Research Centre, by Päivi Parikka.

Results

Identification

The number of registered and identified clones was 90. 78 of these clones were identi-

Table 2. Estimated characters registered. Scale 1—5 or 1—10, 5 or 10 being the best in terms of growing value.

Group of characters	Character	Scale	Remarks
Size	* Height m		
	* Width m		
Health		1—5	Insects and diseases were specified if possible
Habit of growth	* Density	1—5	
Leaves	* Density	1—5	
	* Appearance	1—5	
Flowering	* Abundance	1—10	
	* Appearance	1—5	
Berries	* Abundance	1—10	
	* Appearance	1—5	
General impression	* Habit of growth	1—10	Shape, density
	* Flowering	1—10	Habit of growth, flowering, leaves, health
	* Mid-summer impression	1—10	Habit of growth, leaves, health
	* Autumn impression	1—10	Habit of growth, leaves, berries, health

Table 3. Morphological characters: The *L. tatarica*, *L. x bella* and *L. x notha* clones in different categories. *L. tatarica* clones with red and white flowers are handled separately.

Part of plant	Character	L. tatarica				L. x bella		L. x notha	
		White fl.		Red fl.		% n.	% n.	% n.	
		%	n.	%	n.				
Leaves	SHAPE								
	oblong	33.3	3	—	—	7.1	1	—	—
	elliptic	44.4	4	17.8	8	50.0	7	40.0	4
	ovate	55.6	5	88.9	40	78.6	11	—	—
	obovate	44.4	4	—	—	—	—	—	—
	lanceolate	33.3	3	42.2	19	57.1	8	90.0	9
	GLOSS								
	glossy	—	—	—	—	—	—	10.0	1
	intermediate	—	—	8.9	4	42.8	6	60.0	6
	mat	100	9	91.1	41	57.2	8	30.0	3
Flowers	COROLLA LENGTH								
	11—15 mm	22.2	2	33.3	15	21.4	3	100	10
	16—20 mm	44.4	4	53.3	24	42.9	6	—	—
	21—25 mm	33.3	3	11.1	5	35.7	5	—	—
	26—30 mm	—	—	2.2	1	—	—	—	—
	FLOWER COLOUR								
	white	100	9	—	—	28.6	4	10.0	1
	pink	—	—	55.6	25	7.1	1	—	—
	rosy pink	—	—	31.1	14	50.0	7	—	—
	dark pink	—	—	4.4	2	7.1	1	—	—
	very light pink	—	—	8.9	4	7.1	1	90.0	9
	2-coloured	—	—	17.8	8	71.4	10	90.0	9
	turning yellow	22.2	2	15.6	7	35.7	5	100	10
	Berries	SIZE Ø							
small (4—7 mm)		22.2	2	34.1	15	—	—	40.0	4
interm. (6—8 mm)		33.3	3	54.5	24	7.7	1	30.0	3
large (7—10 mm)		44.4	4	11.4	5	92.3	12	30.0	3
COLOUR									
orange		33.3	3	22.7	10	53.8	7	—	—
red		44.4	4	70.5	31	38.5	5	60.0	6
dark red		22.2	2	6.8	3	7.7	1	40.0	4
GLOSS									
glossy		88.9	8	90.9	40	92.3	12	40.0	4
intermediate	11.1	1	2.2	1	—	—	40.0	4	
mat	—	—	6.8	3	7.7	1	20.0	2	
Number of reg. clones		9		45		14		10	

fied. 54 of the identified clones were *L. tatarica*. 14 of the clones were *L. x bella* Zabel (*L. morrowii* A. Grey x *L. tatarica*); four clones of *L. x bella* were a Canadian variety 'Dropmore'. 10 of the clones were *L. x notha* Zabel (*L. ruprechtiana* Regel x *L. tatarica*). The rest of the clones could not be identified. These clones had no particular growing value and they were excluded from the research. *L. tatarica* was registered in all of the places in-

vestigated, *L. x bella* in Helsinki, Tampere and Oulu and *L. x notha* in Helsinki and Tampere.

Morphological characters

Morphological variation in the complex was remarkable. Variation occurred both within and between the species.

Leaf shape of the clones was variable. The

shape of the leaves of the white-flowered *L. tatarica* was often different from that of the red-flowered. The leaves of *L. tatarica* and *L. x bella* were rather similar, *L. x notha* had leaves different from both the other species: they were usually lanceolate.

The size, form and colour of flowers was highly variable. The flower colour varied from white to different shades of red. The rarest flower colour was dark red. Many of the flowers were two-coloured: the lobes were margined with lighter or darker stripes. All the flowers of *L. x notha* turned yellow when fading. So did some of the flowers of *L. x bella* and even four of *L. tatarica*. The size of the flowers of *L. tatarica* varied a lot, the biggest flowers being 28 mm. *L. x notha* bore the smallest flowers (10–15 mm). The corolla lobes of *L. tatarica* were usually wider than those of the hybrids.

The colour of the berries was orange, red or dark red. *L. x bella* bore the largest berries. The colour of the flowers and berries did not correlate.

Growing value

The habit of growth of the registered clones was rather poor. With *L. tatarica* it varied a lot, but most of the clones were high and sparse. The habit of growth of *L. x bella* was very much like *L. tatarica* but more often wide-spreading. *L. x bella* 'Dropmore' was very broad, dense and wide-spreading.

The appearance of leaves was also rather poor. This was often a result of the attack of pests and diseases.

Most of the bushes were very richly flowering, especially those of *L. x bella*. *L. x notha* was less floriferous than the others and, as its flowers were also rather small and light in colour, the bushes were less showy when flowering than the others. The amount of berries was usually smaller than that of flowers. The amount of berries was largest among *L. x bella*. Especially orange berries were very showy.

The general impression of the bushes was

rather poor in spite of the showy flowering. Especially the habit of growth and health of the bushes were poor. Only five bushes of *L. tatarica* were healthy. Several bushes had leaf spots and almost half of *L. tatarica* bushes were attacked by powdery mildew (*Microsphaera lonicerae* (DC. ex St.-Amans) Winter). Different clones of *L. tatarica* showed different susceptibility to mildew even when grown closely. On *L. x bella* and *L. x notha* powdery mildew was not observed.

When white- and red-flowered *L. tatarica* bushes were examined separately, it was noticed that the growing value of the white-flowered *L. tatarica* clones was often better than that of the red-flowered ones. With white-flowered bushes the given points of health, habit of growth, leaf density and appearance, floriferousness, amount of berries and general impression were usually higher than those of the red-flowered ones.

Clone selection

The aim of the selection was to find clones that have all the good properties that make the taxa of the *Lonicera tatarica* complex worth cultivating: good health, rich flowering, large, beautiful-coloured, broad-lobed flowers, handsome leaves, large berries and a good habit of growth. Clones like this were, however, not easy to find. Especially difficult was it to find clones that were healthy.

Most of the clones were unsuitable because of poor health. Most of the remaining clones were unsuitable because of the poor habit of growth. Of the remaining clones, the 14 most promising ones were selected. Seven of them were *L. tatarica*, 3 with white flowers and 4 with red flowers. Six of the clones were *L. x bella* and one was *L. x notha*.

Selected clones

193 — *L. tatarica*, Helsinki

The most important character of clone 193 was its immunity to powdery mildew. It was one of the healthiest *L. tatarica* bushes found:

Table 4. Estimated growing value characters: *L. tatarica*, *L. x bella* and *L. x notha* clones in different categories. The highest category is always the best in terms of growing value.

Character	Category	<i>L. tatarica</i>				<i>L. x bella</i>		<i>L. x notha</i>	
		White fl.		Red fl.		%	n.	%	n.
		%	n.	%	n.				
Habit of growth (1—10)	3—4	11.1	1	9.3	4	—	—	—	—
	5—6	33.3	3	53.5	23	57.1	8	50.0	5
	7—8	22.2	2	32.6	14	28.6	4	40.0	4
	9—10	33.3	3	4.7	2	7.1	1	10.0	1
Habit of growth: Density (1—5)	2	—	—	2.2	1	14.3	2	10.0	1
	3	33.3	3	46.7	21	35.7	5	60.0	6
	4	33.3	3	35.6	16	35.7	5	30.0	3
	5	33.3	3	15.6	7	14.3	2	—	—
Leaf density (1—5)	2	11.1	1	15.6	7	14.3	2	—	—
	3	11.1	1	40.0	18	14.3	2	30.0	3
	4	33.3	3	40.0	18	50.0	7	50.0	5
	5	44.4	4	4.4	2	21.4	3	20.0	2
Leaf appearance (1—5)	2	—	—	13.3	6	7.1	1	10.0	1
	3	33.3	3	60.0	27	42.9	6	20.0	2
	4	55.6	5	22.2	10	42.9	6	60.0	6
	5	11.1	1	4.4	2	7.1	1	10.0	1
Flowering: abundance (1—10)	1—2	—	—	2.2	1	—	—	—	—
	3—4	—	—	4.4	2	—	—	—	—
	5—6	22.2	2	15.6	7	—	—	10.0	1
	7—8	44.4	4	46.7	21	21.4	3	70.0	7
	9—10	33.3	3	31.1	14	78.6	11	20.0	2
Berries: abundance (1—10)	1—2	33.3	3	29.5	13	—	—	—	—
	3—4	11.1	1	36.4	16	14.3	2	40.0	4
	5—6	33.3	3	22.7	10	21.4	3	20.0	2
	7—8	22.2	2	11.4	5	28.6	4	40.0	4
	9—10	—	—	—	—	28.6	4	—	—
General impression: average of 4 reg. (1—10)	4—5.9	11.1	1	28.9	13	—	—	10.0	1
	6—7.9	55.6	5	66.7	30	71.4	10	80.0	8
	8—10	33.3	3	4.4	2	28.6	4	10.0	1
Health: average of 2 registr. (1—5)	2—2.5	—	—	13.3	6	—	—	—	—
	3—3.5	22.2	2	44.4	20	7.1	1	30.0	3
	4—4.5	44.4	4	37.8	17	57.1	8	50.0	5
	5	33.3	3	4.4	2	35.7	5	20.0	2
Number of reg. clones		9		45		14		10	

it had neither pests nor pathogens. Its leaves were very beautiful. The bush was very richly flowering and it bore pink, rather small (12 mm) flowers and orange berries.

351 — *L. tatarica*, Helsinki

The clone bore rosy-pink two-coloured flowers with a dark red middle stripe. The clone showed a slight susceptibility to powdery mildew. The foliage was dense and dark. The bush was very richly flowering; flowers were

large (18—20 mm) and fragrant, the berries were red.

481 — *L. tatarica*, Helsinki

Clone 481 was the most beautiful clone of the pink-flowered *L. tatarica*. Its leaves were exceptionally handsome. It bore, however, rather small flowers and it also showed a slight susceptibility to powdery mildew. The habit of growth was good: it was rounded and dense. The flowers were middle size (15 mm) and

pink; the corolla lobes were rounded and very wide. The berries were red.

509 — *L. tatarica*, Helsinki

Clone 509 bore the darkest flowers of the species. Its leaves were also beautiful; it showed a susceptibility to powdery mildew. It was a wide, dense shrub with dense and handsome foliage. The flowers were rather large (16–18 mm), two-coloured and very dark red. The berries were red.

177 — *L. tatarica*, Helsinki

Clone 177 bore large, pure white flowers, and it was the most valuable of the *L. tatarica* found. Especially its regular habit of growth was the best of all. It showed some susceptibility to powdery mildew. The bush was rounded, dense and very regular in shape. The foliage was dense and bluish green. The bush was richly flowering and the flowers were large (20 mm) and pure white with wide corolla lobes. The berries were red.

677 — *L. tatarica*, Turku

Clone 677 was rather exceptional: its leaves, flowers and berries were unusually thick or large. The bush showed no susceptibility to pests or diseases. The leaves were thick and bluish green. The flowers were pure white, large (25 mm), with very broad (6 mm) corolla lobes. The berries were large (9–12 mm Ø) and orange in colour.

708 — *L. tatarica*, Oulu

Clone 708 was the third selected clone with white flowers; it resembles 677 to some extent. It was wide-spreading and, growing in deep shade, rather sparse. The leaves were large, grayish and thick. The flowers were large (22 mm) and white with a tinge of red in the buds. The bush bore a lot of orange berries. The bush had neither pests nor diseases.

194 — *L. x bella*, Helsinki

Clone 194 was very richly flowering and healthy; it resembles 541. It was wide-spreading

and somewhat irregular in shape. The leaves were large and rather glossy. The flowering was very abundant and showy, the flowers being large (20–22 mm), rosy-pink and two-coloured with a darker middle stripe. The bush bore abundantly large, orange berries.

541 — *L. x bella*, Helsinki

Clone 541 was very richly flowering. The bush was high and dense but rather irregular in shape. The foliage was dense and dark. The bush was one of the richest in flowering of all the registered honeysuckles, the flowers were large (20–22 mm) and rosy-pink with a darker middle stripe. The bush bore a large number of orange berries. The bush had no pests but showed a slight susceptibility to leaf spots.

571 — *L. x bella* 'Dropmore', Helsinki

Clone 571 was a high and wide-spreading, very floriferous shrub with a large amount of berries. The leaves were very small but the foliage was dense. The flowers were white with curling lobes, small (13 mm), and turned yellow when fading. The berries were large and red. The bush showed no susceptibility to pests or diseases.

664 — *L. x bella*, Helsinki

Clone 664 had a light foliage, rather exceptional flowers and good health. The bush was vigorous and rich in blossom. The flowers were light pink with a white middle stripe; the berries were red. The bush had neither pests nor diseases.

687 — *L. x bella*, Tampere

Clone 687 had an unusual habit of growth and very dark flowers. The bush was low, wide-spreading and very dense. The leaves were thick, dark and hairy. The bush was richly flowering; the flowers were rather large (20 mm), fragrant and two-coloured dark red with curling lobes. The berries were also large and the colour was red. The bush had no pathogens but showed signs of aphids and leaf mining insects.

712 — *L. x bella*, Oulu

Clone 712 was a vigorous, healthy shrub with beautiful foliage. It was rather irregular in shape. The leaves were grayish green and slightly glossy. The flowering was abundant; the flowers were similar to those of clones 194 and 541. The bush bore a lot of shiny, orange berries. The bush had no diseases but showed signs of mites and leaf mining insects.

524 — *L. x notha*, Helsinki

Clone 524 was a healthy bush with a regular habit of growth and a beautiful foliage. The flowering was rather undistinguished. The shoots were thick and short. The leaves were rather large (5–9 cm) and light green. The bush was rich in inflorescence, but the flowers were small (13 mm) and light pink in colour. They were two-coloured and turned dull yellow when fading. The berries were red.

Discussion

Identification

As expected, many bushes cultivated as *L. tatarica* proved to be hybrids. GREEN (1966) reports the same phenomenon in the USA. Some of the hybrids could not be identified even with the help of a key constructed by GREEN (1966); these hybrids were probably backcrossings or triple hybrids.

The identification of some clones was uncertain. The flowers of four *L. tatarica* clones turned yellow when fading; this, according to GREEN (1966), means that the clones were hybrids. The flowers of some *L. x bella* clones, however, lacked the tendency to turn yellow when fading. This tendency, according to GREEN (1966), decreases the growing value of *L. tatarica* hybrids. Thus, the lacking tendency of the flowers to turn yellow increases the growing value of these *L. x bella* clones but shows that they are not real *L. x bella*. It is probable that they are backcrossings between *L. x bella* and *L. tatarica* that have retained

the floriferousness and hairiness of *L. x bella* but lost the tendency for the flowers to turn yellow. It would seem justified to give these clones (e.g. 194, 541, 664, 712) merely a variety name.

Variation

The *L. tatarica* complex proved highly variable. This was expected, because *L. tatarica* itself is highly variable (GREEN 1966) and as the hybridization has been taking place between very variable clones, the hybrids are variable as well.

According to BRANDER (1978), *L. tatarica* is highly susceptible to pests. In this research, however, diseases decreased the general impression of the bushes more clearly than pests. Especially powdery mildew was harmful. In 1983, powdery mildew was very common in Finland also on cereals and berries (MARKKULA 1984). In the *L. tatarica* complex, only *L. tatarica* was susceptible to powdery mildew; on hybrids it was not observed. It is uncertain if this phenomenon is detected anywhere else. The hybrids seem also more resistant to other diseases than *L. tatarica*.

Growing value

L. tatarica is considered the most valuable species in the *L. tatarica* complex (GREEN 1966). In the present study, the growing value of the *L. tatarica* clones was surprisingly low. The species was, however, variable as to the growing value. Anyway, as a species *L. tatarica* was very susceptible to pests and diseases and its habit of growth was often poor. Also e.g. OLSEN (1976) and BRANDER (1978) report the same thing. As ornamentals *L. tatarica* clones with white flowers were more valuable than the ones with red flowers. This has been noticed also in Norway (ANON. 1985) and in Denmark (BRANDER 1982). Contrary to the opinion of GREEN (1966), the hybrids were in the present study often more valuable than *L. tatarica*.

Selected clones

Some of the selected clones of the complex appear to be valuable as ornamentals. Unlike in Denmark, where they could not select any red-flowered *L. tatarica* clones worth cultivation (BRANDER 1982), in this study also some of the *L. tatarica* clones with red flowers appear to be valuable. Especially clones 351, 481 and 509 may prove to be more valuable than the *L. tatarica* 'Rosea' commonly cultivated in Finland, if they only are found healthy enough. Clone 177 appears to be very promising; *L. tatarica* clones with white flowers have not been propagated in the Finnish nurseries so far. The *L. x bella* clones selected resemble each other to some extent, but some of the clones may prove to be worth cultivation, e.g. clone 541. Also the only *L. x notha* clone (524) may be valuable. In the other Nordic countries, no *L. tatarica* hybrid clones have been selected. For example, in the Danish literature there are no reports of the *L. tatarica* hybrids; it may be that the frequency of hybridization around *L. tatarica* has not yet been noted in Denmark.

Because the clones selected now were growing under such different conditions, their real value can be detected only in a clone selection trial. A clone selection trial with the best collected clones is planned to be started in 1987.

Conclusions

The problems with the *L. tatarica* complex in cultivation proved to be the intensity of hybridization, the considerable variation and the lack of health. The many hybrids are so difficult to discern from the real *L. tatarica* that it is probable that *L. tatarica* clones in Finnish nurseries, especially when propagated from seed, are often of hybrid origin. There is, however, no reason to avoid cultivating these *L. tatarica* hybrids: they are vigorous

and richly flowering. Another benefit of the hybrids is their good health: they appear to be resistant to powdery mildew. They also appear to be more resistant to other diseases than *L. tatarica*. These hybrids should, in any case, be named correctly.

As *L. tatarica* complex hybridizes so readily and is so variable, seed propagation of this group should be avoided and the clones in cultivation should be selected carefully. Clone selection can be affected by e.g. habit of growth, abundance, size and colour of the flowering and foliage. Also the varying susceptibility of clones to pests and diseases increases the importance of clone selection of this horticulturally important complex.

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**Rusokuusama-ryhmän (*Lonicera tatarica*
-ryhmä) viljelykantojen rekisteröinti ja
valinta**

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Vanhojen istutusten rusokuusamakantoja tutkittiin kauniiden, terveiden ja kestävien kantojen löytämiseksi. Istutuksia tutkittiin neljällä eri paikkakunnalla. Erilaisia kantoja rekisteröitiin 90 kpl. Kantojen lajinmäärityksessä osoittautui, että hyvin monet rusokuusamina rekisteröidyt kannat olivat erilaisia rusokuusaman hybridejä. Rekisteröidyistä kannoista 14 lupaavinta valittiin jatkotut-

kimuksiin. Valituista kannoista 7 oli aitoja rusokuusamia (*L. tatarica* L.), neljä punakukkaista ja kolme valkokukkaista. Kuusi kantaa oli sirokuusamia (*L. x bella* Zabel) ja yksi perhokuusama (*L. x notha* Zabel).

Rusokuusama (*L. tatarica*) osoittautui voimakkaasti muuntelevaksi, terveydentilaltaan huonoksi ja alttiiksi risteytymään lähilajiensa kanssa. Risteytymien tuloksena syntyneet hybridit (*L. x bella* ja *L. x notha*) olivat kuitenkin usein koristearvoltaan aivan rusokuusaman veroisia, mm. terveydentilaltaan jopa sitä parempia: nämä risteymät eivät näytä olevan alttiita kuusamanhärmälle. Rusokuusamaryhmän lajit näyttävät siis olevan viljelemisen arvoisia; tosin viljellyt kannat on syytä valita huolellisesti ja lisätä niitä vain vegetatiivisesti. Nyt valittujen 14 kannan todellinen arvo selviää vasta tulevilla vertailevilla kenttäkokeissa.