

Evaluation of *Lonicera* Taxa for Honeysuckle Aphid Susceptibility, Winter Hardiness, and Plant Use¹

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Abstract.--One-hundred honeysuckle taxa were evaluated in North Dakota and/or reviewed in the literature for relative honeysuckle aphid [*Hyadaphis tataricae* (Aizenberg)] susceptibility, winterhardiness and landscape characteristics. Thirty-nine taxa were rated susceptible or highly susceptible, nine lightly susceptible and 45 with apparent resistance to aphid disfiguration. Only 12 taxa were selected in the very acceptable to highly recommended categories for landscape planting in USDA hardiness zones 2 through 5. Eight taxa were recommended for potential use in shelterbelt or conservation plantings.

INTRODUCTION

The *Lonicera* genus is a member of the Caprifoliaceae or honeysuckle family. Over 150 species of honeysuckles have been grown in America as well as a large number of cultivars (Bailey and Bailey 1976). Several species have been popular in the Midwest and Northern Plains because of their winterhardiness, adaptation to varied soil and moisture conditions, ease of propagation, and flowering and fruiting characteristics. Although several compact cultivars have been introduced, most species produce medium to large shrubs. Several species have vine-like characteristics. Unfortunately, many species display rather dull leaves by midsummer, lack attractive autumn coloration, and tend to become leggy and unkempt.

Over the past 10 years, the spread of honeysuckle aphid in North America has increasingly devastated many honeysuckles, particularly the species *L. tatarica* (tatarian honeysuckle), and its' cultivars. Honeysuckle aphid [*Hyadaphis tataricae* (Aizenberg)] was first

reported and described in 1936 in Russia after which it was commonly reported in Europe (Grigorov 1965). Voegtlin (1982) hypothesized that this aphid is native to the area where its host plant, tatarian honeysuckle, is found; i.e., northern and western Asia. The aphid first entered North America in Quebec in the mid-1970's on infested plants from Europe (Boisvert *et al.* 1981). The earliest observation in the united states was in northeastern Illinois (Lake County) in 1979 (Voegtlin 1981). Since then, this aphid has spread over a vast area of the Midwest, Great Plains and Canada. Grigorov (1965) gives a detailed account of the insect's biology. Severe witches' brooming is the ultimate effect on susceptible honeysuckle species. Broom-deformed twigs die by fall or in the winter. Damage incurred to susceptible honeysuckles not only results in aesthetic impairment to shrubs in the landscape but sturdy plants may even be killed eventually. Newly planted seedlings or young vigorously growing plants with highly succulent tissues are particularly vulnerable. The damage caused by this insect precipitated a study to re-evaluate the honeysuckle genus for use in landscape and conservation plantings.

OBJECTIVES

The objectives of this study were to:

- 1) Evaluate 100 honeysuckle taxa for susceptibility to honeysuckle aphid.
- 2) Evaluate honeysuckle taxa with apparent honeysuckle aphid resistance for winterhardiness and landscape characteristics.

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3) Provide valid recommendations of honeysuckles for landscape and conservation plantings; particularly in USDA hardiness zones 2 through 5.

4) Initiate a selection program to potentially release one or more superior aphid-resistant cultivars.

METHODS

Sixty-five honeysuckle taxa were grown and evaluated in North Dakota State University (NDSU) research trials. Data on susceptibility to honeysuckle aphid was recorded for three years (1985-87) and data on winterhardiness and landscape characteristics for 5 to 10 years.

Seventy-one honeysuckle taxa were reviewed in the literature to obtain honeysuckle susceptibility ratings. Literature reviewed includes Boisvert *et al.* (1981), Cummings (1981), Evers⁴ (1988), Funk (1982), Lewis (1982), Mainquist *et al.* (1982), Nielson (1982), Nixon (1983), Pellett *et al.* (1985a), Pellett *et al.* (1985b), Sydnor⁵ (1988 and Voegtlin (1982). A total of 100 honeysuckle taxa were evaluated and/or reviewed.

Reports in the literature on honeysuckle taxa were invariably ranked for aphid susceptibility or resistance in an arbitrary manner. Definitive point systems or values were not reported. Efforts were made in this study to correlate NDSU evaluations with the literature reviewed by assigning four rating criteria as follows:

- 1) Highly susceptible - marked leaf and stem distortion, including numerous witches' brooms.
- 2) Susceptible - leaf and stem distortion visible, including scattered witches' brooms.
- 3) Lightly susceptible - slight visible distortion of leaves or stems but essentially devoid of witches' brooms.
- 4) Apparent resistance - no visible distortion of leaves or stems.

Honeysuckle taxa categorized with apparent honeysuckle aphid resistance were evaluated at NDSU and/or reviewed in the literature for winterhardiness

zation and landscape characteristics. Literature reviewed includes Bailey and Bailey (1976), Dirr (1983), Krussman (1977), Rehder (1940), Snyder (1980) and Wyman (1977). The above references were also used to verify scientific nomenclature. In addition, Standardized Plant Names (Kelsey and Dayton 1942) was used to corroborate common names. However, common names are lacking for a considerable number of honeysuckle taxa in the literature.

Primary criteria utilized in evaluating landscape qualities included foliage color, quality and duration; plant height, density and form; and to a lesser degree, flower and fruit characteristics.

Superior F₂ aphid-resistant honeysuckle seedlings are under evaluation from a putative open-pollinated F₁ hybrid. One or more selections may be named and introduced from this pedigree.

RESULTS

Information obtained from this study is summarized in tables 1 through 6. All honeysuckle taxa are listed alphabetically by scientific name. Common names are listed if cited in the literature.

Table 1 lists 39 honeysuckle taxa rated as susceptible or highly susceptible. These two categories are listed together, since both levels of susceptibility preclude recommendation of these taxa for planting.

The species *L. tatarica*, *L. morrowii* and *L. ruprechtiana* are all susceptible to honeysuckle aphid. This is also true for most cultivars and hybrids derived from these species. Seven additional species were also susceptible, including *L. maackii* var. *podocarpa*. However, other accessions of the latter species exhibited considerable resistance which is not readily explainable.

Table 2 lists nine honeysuckle taxa which were lightly susceptible to aphid attack. Most of these taxa are questionable in quality and are not commonly planted. *L. fragrantissima* (winter honeysuckle) has been planted to a limited extent in hardiness zone 5 of the Midwest. Why *L. tatarica* 'Sibirica' was damaged only lightly is open to question, since most cultivars of this species are highly susceptible.

Table 3 lists 45 honeysuckle taxa which display apparent resistance to honeysuckle aphid injury in NDSU trials and/or review of the literature. *L. alpigena*, *L. caerulea*, *L. chrysantha*, *L. ferдинандii*, *L. maackii* and *L. xylosteum* are all noteworthy examples of species showing resistance. Although *L. korolkowii* and *L. x xylosteoides* cultivars displayed resistance in this study, certain authorities question whether these honeysuckle taxa have

⁴Evers, N.P. 1988. Personal Communication, Department of Horticulture, Landscape and Parks, South Dakota State University, Brookings, S.D.

⁵Sydnor, T.D. 1989. Personal Communication, Department of Horticulture, The Ohio State University, Columbus, OH.

Table 1.--Thirty-nine *Lonicera* (honeysuckle) taxa rated as susceptible or highly susceptible to honeysuckle aphid in NDSU evaluations and/or review of the literature.

<u>Scientific Name</u>	<u>Common Name</u>
<u>L. x amoena</u> ¹	Gotha H.
<u>L. x bella</u> ²	Belle H.
<u>L. x bella</u> 'Albida'	White Belle H.
<u>L. x bella</u> 'Atrorosea'	Pink Belle H.
<u>L. x bella</u> 'Candida'	Candida Belle H.
<u>L. x bella</u> 'Dropmore'	Dropmore H.
<u>L. 'Bouquet'</u>	Bouquet H.
<u>L. conjugialis</u>	Purpleflower H.
<u>L. discolor</u>	-----
<u>L. maackii</u> var. <u>podocarpa</u>	Mongolian H.
<u>L. microphylla</u>	-----
<u>L. x minutiflora</u> ³	Bunchberry H.
<u>L. morrowii</u>	Morrow H.
<u>L. muendeniensis</u> ⁴	Muenden H.
<u>L. muendeniensis</u> var. <u>xanthocarpa</u>	-----
<u>L. muscaviensis</u> ⁵	Muscovy H.
<u>L. x myrtilloides</u> ⁶	-----
<u>L. x notha</u> ⁷	Rutarian H.
<u>L. olgae</u>	Olga H.
<u>L. orientalis</u>	Buckthorn H.
<u>L. rupicola</u>	-----
<u>L. ruprechtiana</u>	Manchurian H.
<u>L. tatarica</u>	Tatarian H.
<u>L. tatarica</u> 'Alborosea'	-----
<u>L. tatarica</u> 'Angustifolia'	Narrowleaf H.
<u>L. tatarica</u> 'Beavormor'	Beavormor H.
<u>L. tatarica</u> 'Cardinal'	Cardinal H.
<u>L. tatarica</u> 'Carleton'	Carleton H.
<u>L. tatarica</u> 'Cheerio'	Cheerio H.
<u>L. tatarica</u> 'Grandiflora'	Bride H.
<u>L. tatarica</u> 'Hack's Red'	Hack's Red H.
<u>L. tatarica</u> 'Morden Orange'	Morden Orange H.
<u>L. tatarica</u> 'Mystic Melody'	Mystic Melody H.
<u>L. tatarica</u> 'Nana'	Low H.
<u>L. tatarica</u> 'Roses'	Rosy H.
<u>L. tatarica</u> 'Valencia'	Valencia H.
<u>L. tatarica</u> 'Virginalis'	Maiden H.
<u>L. tatarica</u> 'Wheeling'	Wheeling H.
<u>L. tatarica</u> 'Zabelii'	Zabel's H.

PARENTAGE OF HYBRIDS:

¹ L. x amoena (L. korolkowii x L. tatarica)

² L. x bella (L. morrowii x L. tatarica)

³ L. x minutiflora (L. morrowii x L. x xylosteoides)

⁴ L. x muendeniensis (L. x bella x L. ruprechtiana)

⁵ L. x muscaviensis (L. morrowii x L. ruprechtiana)

⁶ L. x myrtilloides (L. angustifolia x L. myrtillus?)

⁷ L. x notha (L. ruprechtiana x L. tatarica)

Table 2.--Nine Lonicera (honeysuckle) taxa rated as lightly susceptible to honeysuckle aphid in NDSU evaluations and/or review of the literature.

<u>Scientific Name</u>	<u>Common Name</u>
<u>L. demissa</u>	-----
<u>L. fragrantissima</u>	Winter H.
<u>L. insularis</u>	-----
<u>L. insularis</u> x <u>L. tatarica</u> (hyb.)	-----
<u>L. ledebourii</u>	Ledebour H.
<u>L. maximowiczii</u>	Manchurian H.
<u>L. x salicifolia</u>	Willowleaf H. ¹
<u>L. tatarica</u> 'Sibirica'	Red H.
<u>L. tatarinovii</u>	-----

PARENTAGE OF HYBRID:

¹ L. x salicifolia
(L. ruprechtiana x L. x xylosteoides)

Table 3.-Forty-five Lonicera (honeysuckle) taxa with apparent resistance to honeysuckle aphid in NDSU evaluations and/or review of the literature.

<u>Scientific Name</u>	<u>Common Name</u>
<u>L. alpigena</u>	Alps H.
<u>L. alpigena</u> 'Nana'	Dwarf Alps H.
<u>L. x brownii</u> 'Dropmore Scarlet Trumpet' ¹	Dropmore Scarlet Trumpet H.
<u>L. caerulea</u>	Sweetberry H.
<u>L. caerulea</u> var. <u>altaica</u>	Altai H.
<u>L. caerulea</u> var. <u>dependens</u>	-----
<u>L. caerulea</u> (NC-7 Compact selections)	-----
<u>L. caerulea</u> var. <u>edulis</u>	Turkestan H.
<u>L. caerulea</u> 'Kanzu'	Kanzu H.
<u>L. caerulea</u> var. <u>viridifolia</u>	-----
<u>L. chrysantha</u>	Coralline H.
<u>L. chrysantha</u> var. <u>latifolia</u>	Turkestan Coralline H.
<u>L. chrysantha</u> var. <u>villosa</u>	Villous Coralline H.
<u>L. dioica</u>	Limber H.
<u>L. ferdinandii</u>	Ferdinand H.
<u>L. 'Freedom'</u>	Freedom H.
<u>L. glaucescens</u>	Douglas H.
<u>L. x heckrottii</u> ²	Everblooming H.
<u>L. x heckrottii</u> 'Gold Flame'	Gold Flame H.
<u>L. x heckrottii</u> 'Summer Ring'	Summer King H.
<u>L. involucrata</u>	Twinberry or Bearberry H.
<u>L. japonica</u> 'Aureo-reticulata'	Yellownet Japanese H.
<u>L. japonica</u> 'Halliana'	Hall's Japanese H.
<u>L. japonica</u> 'Purpurea'	Purple Japanese H.
<u>L. korolkowii</u>	Blueleaf H.
<u>L. korolkowii</u> 'Floribunda'	Broad Blueleaf H.
<u>L. maackii</u>	Amur H.
<u>L. maackii</u> 'Cling Red'	Cling Red H.
<u>L. maackii</u> 'Rem Red'	Rem Red H.
<u>L. maximowiczii</u> var. <u>sachalinensis</u>	Sakhalin H.
<u>L. prolifera</u>	Grape H.
<u>L. sempervirens</u>	Trumpet H.
<u>L. sempervirens</u> 'Magnifies'	Magnifica Trumpet H.
<u>L. spinosa</u>	Thorn H.
<u>L. spinosa</u> var. <u>albertii</u>	Albert H.
<u>L. syringantha</u>	Lilac H.

Table 3.--Forty-five *Lonicera* (honeysuckle) taxa with apparent resistance to honeysuckle aphid in NDSU evaluations and/or review of the literature. (Continued)

<u>Scientific Name</u>	<u>Common Name</u>
<u>L. syringantha</u> 'Grandifolia'	-----
<u>L.</u> 'Arnold Red'	Arnold Red H.
<u>L. x tellmanniana</u> ³	Tellmann H.
<u>L. vesicaria</u>	-----
<u>L. x xylosteoides</u> 'Clavey's Dwarf' ⁴	Clavey's Dwarf H.
<u>L. x xylosteoides</u> 'Hedge King'	Hedge Ring H.
<u>L. x xylosteoides</u> 'Miniglobe'	Miniglobe H.
<u>L. xylosteum</u>	European Fly H.
<u>L. xylosteum</u> 'Emerald Mound'	Emerald Mound H.

PARENTAGE OF HYBRIDS:

- ¹ L. x brownii (L. hirsuta x L. sempervirens)
- ² L. x heckrottii (L. x americana x L. sempervirens)
- ³ L. x tellmanniana (L. sempervirens x L. tragophylla)
- ⁴ L. x xylosteoides (L. tatarica x L. xylosteum)

complete resistance. Additional time may be needed to make a final judgment. It is noteworthy that nearly all of the vine honeysuckle species show resistance. In addition, the apparent resistance of L. tatarica 'Arnold Red' is quite important. Based on this study, it is the only tatarian honeysuckle cultivar recommended for general planting since the honeysuckle aphid entered and began to devastate honeysuckles in North America.

Table 4 lists seven taxa which were not categorized in this study due to insufficient and/or conflicting data concerning aphid attack.

Based upon NDSU evaluations and/or review of the literature, table 5 is a summation of honeysuckle taxa with apparent resistance to aphid attack recommended for planting in USDA hardiness zones 2 through 5. Landscape qualities of the species or cultivar, in addition to aphid resistance, determine the category in which the plant appears. Hardiness zones and approximate plant heights are also included.

Only four taxa were highly recommended. Brief descriptive features of these plants are as follows:

L. x brownii 'Dropmore Scarlet Trumpet' (Dropmore Scarlet Trumpet H.). A hybrid vine introduced by the late F.L. Skinner, Dropmore, Manitoba with significantly greater winter hardiness compared to other commonly grown vine honeysuckles. It is quite sterile and produces showy orange-scarlet tubular flowers from June to November.

L. maximowiczii var. sachalinensis (Sakhalin H.). A large shrub with bright green, attractive foliage and good shrub density.

Table 4. Seven *Lonicera* (honeysuckle) taxa which were not categorized for honeysuckle aphid susceptibility or resistance due to insufficient and/or conflicting data.

<u>Scientific Name</u>	<u>Common Name</u>
<u>L. x amoena</u> 'Albs'	White Gotha H.
<u>L. x amoena</u> 'Arnoldiana'	Arnold H.
<u>L. nigra</u>	-----
<u>L. obovata</u>	-----
<u>L. tatarica</u> 'Albs'	White H.
<u>L. tatarica</u> 'Des Moines'	Des Moines H.
<u>L. x xylosteoides</u>	Vienna H.

Leaves often display a reddish cast on new growth. Purple flowers, dark red fruit. Native to Korea, Japan and Sakhalin Island, USSR.

L. x xylosteoides 'Miniglobe' (Miniglobe H.). An introduction from the Morden Research Station, Morden, Manitoba which is superior to 'Clavey's Dwarf' in form, compactness and foliage color. It has a distinct winter hardiness advantage over 'Emerald Mound' in northern zones. It produces creamy colored flowers and very dark red fruits, both somewhat inconspicuous.

L. xylosteum 'Emerald Mound' (Emerald Mound H.). An excellent compact mound-like honeysuckle with emerald-green leaves. Dull creamy-yellow flowers, dark red non-showy fruits. It is not sufficiently winterhardy in northernmost zones. Apparently identical to 'Compacts', originally named in Poland in 1931. The cultivar 'Nana' is also a synonym in the U.S.

The primary reason for not placing 'Arnold Red' and 'Clavey's Dwarf' honeysuckles in the highly recommended category is a general

Table 5.--Lonicera (honeysuckle) taxa with apparent resistance to honeysuckle aphid recommended for landscape planting in USDA hardiness zones 2, 3, 4 and 5.

Lonicera taxa	Hardiness zone recommendation	Shrub height (ft.):vine (v)
Highly Recommended		
<u>L. x brownii</u> 'Dropmore Scarlet Trumpet' (Dropmore Scarlet Trumpet H.)	2b ,3,4,5	v
<u>L. maximowiczii</u> var. <u>sachalinensis</u> (Sakhalin H.)	3,4,5	6-9
<u>L. x xylosteoides</u> 'Miniglobe' (Miniglobe H.)	2,3,4,5	3-4
<u>L. xylosteum</u> 'Emerald Mound' (Emerald Mound H.)	4,5	3-5
Very Acceptable		
<u>L. alpigena</u> 'Nana' (Dwarf Alps H.)	4b ,5	3
<u>L. caerulea</u> (NC-7 compact selections of Sweetberry H.)	2,3,4,5	2-4
<u>L. korolkowii</u> 'Floribunda' (Broad Blueleaf H.)	3,4,5	6-7
<u>L. maackii</u> (Amur H.)	2,3,4,5	9-12
<u>L. maackii</u> 'Cling Red' and 'Rem Red' (Cling Red and Rem Red H.)	4b ,5	9-12
<u>L. tatarica</u> 'Arnold Red' (Arnold Red H.)	2,3,4,5	10
<u>L. x xylosteoides</u> 'Clavey's Dwarf' (Clavey's Dwarf H.)	2,3,4,5	6-7
Fairly Acceptable		
<u>L. caerulea</u> (Sweetberry H. and its var's. and cv.'s)	2,3,4,5	5-6
<u>L. dioica</u> (Limber H.)	2,3,4,5	v (shrubby)
<u>L. ferdinandii</u> (Ferdinand H.)	4b ,5	8-9
<u>L. fragrantissima</u> (Winter H.)	5	6-8
<u>L. 'Freedom'</u> (Freedom H.)	3,4,5	8
<u>L. glaucescens</u> (Douglas H.)	2,3,4,5	v (shrubby)
<u>L. heckrottii</u> (Everblooming H., including 'Goldflame' and 'Summer King')	4b ,5	v
<u>L. korolkowii</u> (Blueleaf H.)	4,5	9-10
<u>L. japonica</u> cultivars (Japanese H.)	5	v
<u>L. sempervirens</u> (Trumpet H., including 'Magnifica')	4,5	v
<u>L. spinosa</u> (Thorn H., including var. <u>albertii</u>)	3b,4,5	2-3
<u>L. syringantha</u> (Lilac H., including 'Grandiflora')	4,5	6
<u>L. x tellmanniana</u> (Tellmann H.)	4,5	v
<u>L. x xylosteoides</u> 'Hedge King'(Hedge King H.)	3,4,5	5-6
<u>L. xylosteum</u> (European Fly H.)	3,4,5	9
Undesirable		
All 39 <u>Lonicera</u> taxa in Table 1 which proved susceptible or highly susceptible to honeysuckle aphid, plus the following additional taxa.		
<u>L. alpigena</u> (Alps H.)	4,5	8-9
<u>L. chrysantha</u> (Coral line H. & var's. <u>latifolia</u> & <u>villosa</u>)	4,5	8-10
<u>L. demissa</u>	3,4,5	10-12
<u>L. involucrata</u> (Twinberry or Bearberry H.)	4,5	6
<u>L. prolifera</u> (Grape H.)	4,5	v (shrubby)
<u>L. x salicifolia</u> (Willowleaf H.)	3,4,5	9

CONCLUSIONS

deficiency in foliage quality. 'Arnold Red' also becomes quite tall and leggy. Plants listed in the fairly acceptable category are certainly usable but deficient in one or more landscape qualities. Nearly 50% of the honeysuckle taxa in this study are included in the undesirable category due to aphid susceptibility and/or unsatisfactory landscape qualities.

Table 6 lists eight honeysuckle taxa which are recommended for potential use in shelterbelt, farmstead windbreaks, reclamation and wildlife plantings. All of these are medium-tall to tall in size which may make them more useful for shelterbelt and conservation purposes.

The *Lonicera* genus has often been relegated to a lower rung on the woody plant generic ladder as far as providing choice landscape plants. Many honeysuckles are characterized by dull foliage, leggy growth habits and a seemingly lifeless appearance in winter. Yet, this genus has provided a very useful group of shrubs due to their winterhardiness and adaptability. Although numerous honeysuckle taxa are very susceptible to honeysuckle aphid, there is still a significant pool of resistant honeysuckles to draw upon in making recommendations. The use of honeysuckles in our landscapes is not a dead issue. Hopefully, as breeding and selection programs progress, the inventory of honeysuckles with landscape merit may be expanded in the future.

1) Thirty-nine honeysuckle taxa were rated susceptible or highly susceptible, nine lightly susceptible and 45 exhibited apparent resistance to honeysuckle aphid infestation, respectively. Seven taxa were not classified because of insufficient or conflicting data. *L. tatarica*, *L. morrowii* and *L. ruprechtiana*, including cultivars and hybrids derived from these species, were particularly susceptible.

2) All taxa with apparent aphid resistance were evaluated for hardiness zone assignment and landscape qualities. Only four taxa were highly recommended for landscape use, including *L. x brownii* 'Dropmore Scarlet Trumpet', *L. maximowiczii* var. *sachalinensis*, *L. x xylostoides* 'Miniglobe' and *L. xylosteum* 'Emerald Mound'. Eight taxa were rated as very acceptable and 28 taxa as fairly acceptable. All 39 taxa which proved susceptible or highly susceptible to honeysuckle aphid, plus eight additional taxa, were rated as undesirable. These 47 taxa represent nearly 50% of the taxa evaluated in this study.

3) Eight taxa were recommended for potential use in shelterbelt or conservation plantings as replacements for aphid susceptible *Lonicera* taxa.

4) Selection of apparent aphid resistant superior hybrid seedlings for potential release is proceeding.

Table 6. Eight *Lonicera* (honeysuckle) taxa recommended for propagation and potential use in shelterbelt or conservation plantings as replacements for aphid susceptible taxa.

<i>Lonicera</i> taxa	Hardiness zone recommendation
<i>L. chrysantha</i> (Coralline H. and botanical varieties) ¹	3,4,5
<i>L.</i> 'Freedom' (Freedom H.) ²	3,4,5
<i>L. korolkowii</i> (Blueleaf H.) ¹	3b,4,5
<i>L. korolkowii</i> 'Floribunda' (Broad Blueleaf H.) ²	3b,4,5
<i>L. maackii</i> (Amur H.) ¹	2,3,4,5
<i>L. maximowiczii</i> var. <i>sachalinensis</i> (Sakhalin H.) ¹	3,4,5
<i>L. tatarica</i> 'Arnold Red' (Arnoid Red H.) ²	2,3,4,5
<i>L. xylosteum</i> (European Fly H.) ¹	3,4,5

¹Since honeysuckle species hybridize freely, there is risk in obtaining true to type honeysuckles if seed is collected from plants growing in close proximity to other species or hybrids.

² In order to maintain these cultivars as true clones with apparent resistance to honeysuckle aphid, they must be vegetatively propagated by cuttings, not sexually by seed.

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