

Chapter 7

Special Supplement – List of Reported Interspecific Hybrids Within the Genus *Nicotiana*



Several investigators compiled comprehensive lists of *Nicotiana* hybrids. The earliest modern inventory was that by East (1928) who listed 65 interspecific combinations. It was followed by the list published by Kostoff (1943) who reported on 181 hybrids known to him. The last complete lists of interspecific *Nicotiana* hybrids with references were published by Goodspeed (1945, 1954). In the latter publication, the references to particular hybrids were scattered among the entries of the book's subject index. Together with several new combinations added a few years later (Goodspeed and Thompson, 1959) the number of documented interspecific hybrids stood at 243. The numbers of *Nicotiana* hybrids that were communicated later (Smith, 1968, 300 hybrids) and Apparao and Ramavarma (1974, 340 hybrids) were not supported by references to particular hybrid combinations. For the lack of more accurate data those estimations, although long outdated, have been non-the-less frequently quoted up to the present time. As more than 70 years have elapsed since Goodspeed's last inventory, the author of this volume thought it advisable to prepare a long-overdue update. Although the list below obviously exceeds the topical delimitations of this volume, annexing this updated inventory to a regular monograph on a closely related subject seems to be a good practical solution since publishing self-contained lists of this kind is not an accepted custom. The list also serves as an extension to the last column of Table 7.1.

In all probability, the list is not complete. It drew mostly on reports that were accessible through the web. The author faced the same problem as he did while working on other parts of this review: difficulty in searching materials published in remote parts of the globe or in exotic languages or/and scripts. Conversely, many of the listed hybrids have been repeatedly reported in many publications. Regardless of reporting frequency, only the first reports, a maximum of seven, were cited for each hybrid combination.

In earlier reports, hybrids that failed to reach the blooming stage did not qualify as successful hybrids and usually were listed separately. The list in this volume was extended by adding two, possibly debatable, categories:

Table 7.1 Interspecific hybrids within the genus *Nicotiana* reported by the year 2023

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
1.	<i>N. alata</i>	<i>N. bonariensis</i>	F, M	Avery (1938), Kostoff (1940), Goodspeed (1945)
2.	<i>N. alata</i>	<i>N. langsdorffii</i>	F, M	Focke (1881), East and Hayes (1912), East (1916)
3.	<i>N. alata</i>	<i>N. longiflora</i>	F, M	East and Hayes (1912), Avery (1938), Goodspeed (1945), Näf (1958)
4.	<i>N. alata</i>	<i>N. mutabilis</i>	F, M	Stehmann et al. (2002)
5.	<i>N. alata</i>	<i>N. plumbaginifolia</i>	F, M	Goodspeed (1945), Takenaka (1950), Engvild (1950)
6.	<i>N. alata</i>	<i>N. sanderae</i>	F, M	D. Kostoff after Bradley and Goodspeed (1943)
7.	<i>N. alata</i>	<i>N. forgetiana</i>	F, M	East and Hayes (1912), Sorrentino et al. (2006)
8.	<i>N. alata</i>	<i>N. raströensis</i> ¹	M	Descorbeth (2004), Descorbeth and McClure (2005)
9.	<i>N. alata</i>	<i>N. tabacum</i>	M	East and Hayes (1912), Kostoff (1930), Kostoff (1943), Ternovsky (1962)
10.	<i>N. alata</i>	<i>N. glauca</i>	M	Kostoff (1943), Goodspeed (1945), Takenaka (1953a)
11.	<i>N. alata</i>	<i>N. noctiflora</i>	M	Kostoff (1940), Goodspeed (1945), Näf (1958)
12.	<i>N. alata</i>	<i>N. knightiana</i>	M	Takenaka (1965), Takanashi and Marubashi (2017)
13.	<i>N. alata</i>	<i>N. paniculata</i>	F, M	Kostoff (1943), Goodspeed (1945), Näf (1958), Takenaka (1961)
14.	<i>N. alata</i>	<i>N. quadrivalvis</i>	M	Kostoff (1943), Goodspeed (1945)
15.	<i>N. alata</i>	<i>N. rustica</i>	F, M	Whitaker (1934), Zhukov (1939), Goodspeed (1945), Kehr (1951), Kehr and Smith (1954), Wolf (1965)
16.	<i>N. alata</i>	<i>N. amplexicaulis</i>	M	Gopinath et al. (1965, 1970)
	<i>N. alata</i>	<i>N. debneyi</i>	F	Zenkter et al. (1981), Bartkowiak (1987)
18.	<i>N. alata</i>	<i>N. gossei</i>	F, M	Kostoff (1940), Goodspeed (1945), Takenaka (1962b), Gopinath et al. (1965, 1970)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
19.	<i>N. alata</i>	<i>N. maritima</i>	M	Kostoff (1943), Goodspeed (1945)
20.	<i>N. alata</i>	<i>N. suaveolens</i>	M	Kostoff (1943), Goodspeed (1945)
21.	<i>N. alata</i>	<i>N. velutina</i>	M	Bradley and Goodspeed (1943)
22.	<i>N. alata</i>	<i>N. eastii</i>	M	Kostoff (1940), Goodspeed (1945)
23.	<i>N. alata</i>	<i>N. tomentosiformis</i>	M	Goodspeed, 1945
24.	<i>N. alata</i>	<i>N. sylvestris</i>	M, asexual	Berbeć et al. (1976), Fluhr, 1983
25.	<i>N. alata</i>	<i>N. undulata</i>	M	Takanashi and Marubashi (2017)
26.	<i>N. bonariensis</i>	<i>N. langsdorffii</i>	F, M	Muntzing, 1935, Avery (1938), Kostoff (1943), Goodspeed (1945), Näf (1958)
27.	<i>N. bonariensis</i>	<i>N. longiflora</i>	F, M	Avery (1938), Goodspeed (1945, 1954)
28.	<i>N. bonariensis</i>	<i>N. mutabilis</i>	M	Stehmann et al. 2002
29.	<i>N. bonariensis</i>	<i>N. plumbaginifolia</i>	F	Kostoff (1943), Goodspeed (1945), Näf (1958)
30.	<i>N. bonariensis</i>	<i>N. raströensis</i> ¹	F, M	Lee et al. (2008)
31.	<i>N. bonariensis</i>	<i>N. forgetiana</i>	F	Butenko & Luneva, 1966
32.	<i>N. bonariensis</i>	<i>N. sanderæ</i>	F, M	Kostoff (1943)
33.	<i>N. bonariensis</i>	<i>N. tabacum</i>	M?	Stavelly 1979, Busconi et al. (2010)
34.	<i>N. bonariensis</i>	<i>N. glauca</i>	F	Williams and Pandey 1975 ⁵
35.	<i>N. bonariensis</i>	<i>N. quadrivalvis</i>	M (l)	Näf (1958)
36.	<i>N. bonariensis</i>	<i>N. rustica</i>	M	Näf (1958)
37.	<i>N. bonariensis</i>	<i>N. suaveolens</i>	M	Näf (1958)
38.	<i>N. forgetiana</i>	<i>N. langsdorffii</i>	F	East and Hayes (1912), White (1914)
39.	<i>N. forgetiana</i>	<i>N. mutabilis</i>	M	Stehmann et al. (2002)
40.	<i>N. forgetiana</i>	<i>N. plumbaginifolia</i>	M	Näf (1958), Takenaka (1965)
41.	<i>N. forgetiana</i>	<i>N. sanderæ</i>	F, M	Sorrentino et al. (2006)
42.	<i>N. forgetiana</i>	<i>N. raströensis</i> ¹	F, M	Lee et al. (2008)
43.	<i>N. forgetiana</i>	<i>N. tabacum</i>	M	Näf (1958), Ahuja (1962)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (I) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
44.	<i>N. forgetiana</i>	<i>N. glauca</i>	F, M	Williams and Pandey (1975)
45.	<i>N. forgetiana</i>	<i>N. quadrivalvis</i>	M (I)	Näf (1958)
46.	<i>N. forgetiana</i>	<i>N. rustica</i>	M	Näf (1958)
47.	<i>N. langsdorffii</i>	<i>N. longiflora</i>	M	Goodspeed, 1945, Takenaka et al. (1956), Avery, 1962
48.	<i>N. langsdorffii</i>	<i>N. mutabilis</i>	M	Stehmann et al. (2002)
49.	<i>N. langsdorffii</i>	<i>N. plumbaginifolia</i>	F, M	Kostoff (1943), Goodspeed, 1945, 1954
50.	<i>N. langsdorffii</i>	<i>N. sanderae</i>	F, M	East, 1935 Smith (1937), Kostoff, 1943, Goodspeed (1945, 1954)
51.	<i>N. langsdorffii</i>	<i>N. raströensis</i> ¹	F, M	Lee et al. (2008)
52.	<i>N. langsdorffii</i>	<i>N. tabacum</i>	M	East & Hayes, 1912, East (1935), Hu, 1956, Takenaka (1962b), Burk, 1972
53.	<i>N. langsdorffii</i>	<i>N. glauca</i>	F, M	premendelian, East (1928, 1935), Whitaker (1934), Goodspeed (1954)
54.	<i>N. langsdorffii</i>	<i>N. noctiflora</i>	M	Kostoff (1943), Goodspeed (1945, 1954)
55.	<i>N. langsdorffii</i>	<i>knightiana</i>	M	Takanashi and Marubashi (2017)
56.	<i>N. langsdorffii</i>	<i>N. paniculata</i>	M	premendelian, East and Hayes (1912), Whitaker (1934), Kostoff (1939b), Kehr and Smith, 1954, Takenaka (1962a), Takenaka and Yoneda (1964)
57.	<i>N. langsdorffii</i>	<i>N. miersii</i>	M	Kostoff (1940, 1943), Goodspeed (1945, 1954), Kehr (1951), Kehr and Smith (1954), Wolf (1965)
58.	<i>N. langsdorffii</i>	<i>N. quadrivalvis</i>	F	East and Hayes (1912), Kostoff, 1943, Näf (1958), Tezuka (2012)
59.	<i>N. langsdorffii</i>	<i>N. repanda</i>	M	Schweppenhauser et al. (1963)
60.	<i>N. langsdorffii</i>	<i>N. suaveolens</i>	M	premendelian, East (1928), Kostoff (1939b, 1943), Smith (1958), Smith and Abashian (1963), Wolf (1965)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
61.	<i>N. langsdorffii</i>	<i>N. rustica</i>	M	East and Hayes (1912), Kostoff (1930), Whitaker (1934), Kehr (1951), Kehr and Smith (1954), Wolf (1965)
62.	<i>N. langsdorffii</i>	<i>N. otophora</i>	?	Berbec' et al. (1976)
63.	<i>N. langsdorffii</i>	<i>N. glutinosa</i>	M	East (1935)
64.	<i>N. langsdorffii</i>	<i>N. undulata</i>	M	Goodspeed (1945), Takanashi and Marubashi (2017)
65.	<i>N. langsdorffii</i>	<i>N. obtusifolia</i>	F (l)	Christoff (1928)
66.	<i>N. longiflora</i>	<i>N. sanderæ</i>	F, M	Malloch and Malloch (1924), Brieger (1929), Kostoff (1943), Takenaka (1955)
67.	<i>N. longiflora</i>	<i>N. plumbaginifolia</i>	F, M	Avery (1938), Kostoff (1943), Goodspeed (1945), Murthy et al. (1998)
68.	<i>N. longiflora</i>	<i>N. tabacum</i>	M, F	Malloch (1924), Kostoff (1943), Takenaka (1962d), Sievert (1972) ³ , Sarala et al. (2023)
69.	<i>N. longiflora</i>	<i>N. glauca</i>	F, M	East (1935), Kostoff (1943), Kehr (1951), Takenaka (1952a, 1953a, 1965), Murthy et al. (1998)
70.	<i>N. longiflora</i>	<i>N. paniculata</i>	F	Christoff (1928), Takenaka (1962a)
71.	<i>N. longiflora</i>	<i>N. quadrivalvis</i>	M (l)	Tezuka (2012)
72.	<i>N. longiflora</i>	<i>N. repanda</i>	M	Schweppenhauser et al. (1963), Davis et al. (1988)
73.	<i>N. longiflora</i>	<i>N. rustica</i>	M	McCray (1933)
74.	<i>N. longiflora</i>	<i>N. amplexicaulis</i>	not indicated	Gopinath et al. (1970)
75.	<i>N. longiflora</i>	<i>N. debneyi</i>	M	Näf (1958), Ahuja (1968)
76.	<i>N. longiflora</i>	<i>N. excelsior</i>	M	Takenaka (1965), Murthy et al. (1998)
77.	<i>N. longiflora</i>	<i>N. gossei</i>	M	Goodspeed (1945), Takenaka et al. (1956), Takenaka (1962b), Takenaka and Yoneda (1964)
78.	<i>N. longiflora</i>	<i>N. ingulba</i>	M	Kostoff (1943)
79.	<i>N. longiflora</i>	<i>N. megalosiphon</i>	M	Goodspeed (1945, 1954)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
80.	<i>N. longiflora</i>	<i>N. suaveolens</i>	M	East (1935), Kostoff (1943), Goodspeed (1945, 1954), Takenaka (1952b), Takenaka and Yoneda (1964)
81.	<i>N. longiflora</i>	<i>N. eastii</i>	M	Kostoff (1940), Goodspeed (1945)
82.	<i>N. longiflora</i>	<i>N. sylvestris</i>	F	Savelli (1926)
83.	<i>N. longiflora</i>	<i>N. glutinosa</i>	F	Murthy et al. (1998)
84.	<i>N. longiflora</i>	<i>N. undulata</i>	M	Goodspeed (1945)
85.	<i>N. mutabilis</i>	<i>N. rastroensis</i> ¹	M	Lee et al. (2008)
86.	<i>N. plumbaginifolia</i>	<i>N. sanderae</i>	F, M	Goodspeed (1945), Kehr and Smith (1952), Takenaka (1953c, 1955)
87.	<i>N. plumbaginifolia</i>	<i>N. rastroensis</i> ¹	F, M	Lee et al. (2008)
88.	<i>N. plumbaginifolia</i>	<i>N. tabacum</i>	F, M	Pal and Nath (1936), Kostoff (1943), Kincaid (1949), Moav and Cameron (1960), Näf (1958), Burk (1960)
89.	<i>N. plumbaginifolia</i>	<i>N. glauca</i>	F, M	McCray (1932), Kostoff (1943), Ramanujam and Joshi (1942), Kehr and Smith (1952), Takenaka (1951a, 1953a)
90.	<i>N. plumbaginifolia</i>	<i>N. paniculata</i>	M	Christoff (1928) (l), Lilienfeld (1953), Näf (1958), Takenaka (1962a),
91.	<i>N. plumbaginifolia</i>	<i>N. quadrivalvis</i>	F	Christoff (1928) (l), Tezuka (2012) (l)
92.	<i>N. plumbaginifolia</i>	<i>N. rustica</i>	M	Kostoff (1943), Takenaka and Yoneda (1964)
93.	<i>N. plumbaginifolia</i>	<i>N. debneyi</i>	M	Kehr (1951), Kehr and Smith (1952, 1954), Smith and Abashian (1963)
94.	<i>N. plumbaginifolia</i>	<i>N. excelsior</i>	M	Sarala et al. (2008), Murthy and Rao (2008)
95.	<i>N. plumbaginifolia</i>	<i>N. gossei</i>	M	Takenaka et al. (1956), Takenaka (1962b), Murthy and Rama Prasad (2000)
96.	<i>N. plumbaginifolia</i>	<i>N. maritima</i>	F, M	Goodspeed (1945)
97.	<i>N. plumbaginifolia</i>	<i>N. megalosiphon</i>	M	Goodspeed (1945)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (I) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
98.	<i>N. plumbaginifolia</i>	<i>N. suaveolens</i>	M	Goodspeed (1945), Kehr and Smith (1952), Takenaka (1952b, 1962b), Näf (1958)
99.	<i>N. plumbaginifolia</i>	<i>N. umbratica</i>	F, M	Gangadevi et al. (1987)
100.	<i>N. plumbaginifolia</i>	<i>N. eastii</i>	M	Goodspeed (1945)
101.	<i>N. plumbaginifolia</i>	<i>N. sylvestris</i>	asexual	Lin and Chen (1990), Cseplo et al.(1983)
102.	<i>N. plumbaginifolia</i>	<i>N. otophora</i>	asexual	Lin and Chen (1990)
103.	<i>N. plumbaginifolia</i>	<i>N. obtusifolia</i>	M	Murthy et al. (1998)
104.	<i>N. sanderae</i>	<i>N. tabacum</i>	F, M	Christoff (1928), Kostoff (1930), East (1935), Kehr and Smith (1954), Ternovsky (1962)
105.	<i>N. sanderae</i>	<i>N. glauca</i>	M	Kostoff (1930), Brieger and Forster (1942), Goodspeed (1945)
106.	<i>N. sanderae</i>	<i>N. noctiflora</i>	M	Kostoff (1935, 1940), Goodspeed (1945)
107.	<i>N. sanderae</i>	<i>N. paniculata</i>	F, M	Brieger (1929), East (1935), Goodspeed (1954), Kehr (1951), Kehr and Smith (1954)
108.	<i>N. sanderae</i>	<i>N. repanda</i>	M	Takenaka (1953c, 1955)
109.	<i>N. sanderae</i>	<i>N. miersii</i>	M	Näf (1958)
110.	<i>N. sanderae</i>	<i>N. rustica</i>	M	Kostoff (1930), Whitaker (1934), Goodspeed (1945), Kehr (1951), Kehr and Smith (1954)
111.	<i>N. sanderae</i>	<i>N. amplexicaulis</i>	M	Gopinath et al. (1965)
112.	<i>N. sanderae</i>	<i>N. debneyi</i>	asexual	Patel et al. (2011)
113.	<i>N. sanderae</i>	<i>N. gossei</i>	M	Goodspeed (1945)
114.	<i>N. sanderae</i>	<i>N. maritima</i>	M	Goodspeed (1945, 1954)
115.	<i>N. sanderae</i>	<i>N. suaveolens</i>	M	Goodspeed (1945), Takenaka (1955)
116.	<i>N. sanderae</i>	<i>N. eastii</i>	M	Kostoff (1939b, 1940)
117.	<i>N. sanderae</i>	<i>N. sylvestris</i>	M	Kostoff (1943)
118.	<i>N. sanderae</i>	<i>N. quadrivalvis</i>	M	Whitaker (1934), Kostoff (1943), Kehr (1951), Kehr and Smith (1954), Wolf (1965)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
119.	<i>N. tabacum</i>	<i>N. glauca</i>	F, M	premendelian, East (1935)
120.	<i>N. tabacum</i>	<i>N. noctiflora</i>	F	Palakarcheva (1975), Dorossiev et al. (1978)
121.	<i>N. tabacum</i>	<i>N. petunioides</i>	F	Gisquet et al. (1940)
122.	<i>N. tabacum</i>	<i>N. benavidesii</i>	F	Goodspeed (1945)
123.	<i>N. tabacum</i>	<i>N. cordifolia</i>	M	Durbin and Uchtyl (1977), Burk and Durbin (1978)
124.	<i>N. tabacum</i>	<i>N. knightiana</i>	F, M	Goodspeed (1945), Tanaka (1961), Takenaka (1962d), Berbeć et al. (1982)
125.	<i>N. tabacum</i>	<i>N. paniculata</i>	F, M	premendelian (East (1928)), Kostoff (1943), Goodspeed (1954), Takenaka (1962d)
126.	<i>N. tabacum</i>	<i>N. raimondii</i>	F, M	Kostoff (1943), Goodspeed (1954), Burk et al. (1982), Berbeć (1988)
127.	<i>N. tabacum</i>	<i>N. solanifolia</i>	F	Goodspeed (1945), Takenaka (1956a, b)
128.	<i>N. tabacum</i>	<i>N. acuminata</i>	F	Gentscheff (Kostoff (1943)), Palakarcheva (1981), Iwai et al. (1986)
129.	<i>N. tabacum</i>	<i>N. pauciflora</i>	F	Gentscheff (1931), Kostoff (1943), Goodspeed (1945)
130.	<i>N. tabacum</i>	<i>N. clevelandii</i>	M	Kehr and Smith (1952), Kaul (1988)
131.	<i>N. tabacum</i>	<i>N. quadrivalvis</i>	F, M	premendelian (East (1928)), East and Hayes (1912), Kostoff (1943)
132.	<i>N. tabacum</i>	<i>N. nesophila</i>	M	Reed and Collins (1978, 1980), Huesing et al. (1989)
133.	<i>N. tabacum</i>	<i>N. nudicaulis</i>	F, M	Gentscheff (1931), Kostoff (1943)
134.	<i>N. tabacum</i>	<i>N. repanda</i>	F, M	Foster (1943), Kincaid (1949), Pittarelli and Stavely (1975), Nagao (1982 ⁶)
135.	<i>N. tabacum</i>	<i>N. stocktonii</i>	M,	Wong (1975), Reed and Collins (1978, 1980)
136.	<i>N. tabacum</i>	<i>N. rustica</i>	F, M	premendelian, East and Hayes (1912), Eghis (1927), Savelli (1927), East (1935)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (I) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
137.	<i>N. tabacum</i>	<i>N. africana</i>	F, M	Gerstel et al. (1979), Nikova and Zagorska (1990)
138.	<i>N. tabacum</i>	<i>N. amplexicaulis</i>	M, F	Wark (1970), Berbeć and Doroszewska (1981), Larkina (1980), Sarala et al. (2023)
139.	<i>N. tabacum</i>	<i>N. benthamiana</i>	F, M	Subhashini et al. (1986), DeVerna et al. (1987), Nikova et al. (1991), Zaitlin and Mundell ((2006)), Mihaylova-Kroumova et al. (2020), Sarala et al. (2023)
140.	<i>N. tabacum</i>	<i>N. cavicola</i>	M	Nikova et al. (2006)
141.	<i>N. tabacum</i>	<i>N. debneyi</i>	M	Kostoff (1943), Goodspeed (1954), Takenaka (1956a)
142.	<i>N. tabacum</i>	<i>N. excelsior</i>	M	Wark (1970), Nikova (1986), Murthy et al. (2014)
143.	<i>N. tabacum</i>	<i>N. exigua</i>	M	Wark (1970), Kobus (1971)
144.	<i>N. tabacum</i>	<i>N. fragrans</i>	M	Durbin and Uchtyl (1977)
145.	<i>N. tabacum</i>	<i>N. goodspeedii</i>	M	Butenko et al. (1970), Wark (1970)
146.	<i>N. tabacum</i>	<i>N. gossei</i>	M, F	Valleau (1952), Takenaka (1962d), Sievert (1972) ⁴ , Adachi and Inoue (1995), Murthy et al. (2014), Sarala et al. (2023)
147.	<i>N. tabacum</i>	<i>N. hesperis</i>	M	Kubo (1985)
148.	<i>N. tabacum</i>	<i>N. ingulba</i>	M	Butenko et al. (1970), Nikova et al. (1998)
149.	<i>N. tabacum</i>	<i>N. maritima</i>	M	Wark (1970), Palakarcheva (1975)
150.	<i>N. tabacum</i>	<i>N. megalosiphon</i>	M	Clayton (1950), Takenaka (1962d), Hranov (1970), Sarala et al. (2023)
151.	<i>N. tabacum</i>	<i>N. occidentalis</i>	M	Butenko et al. (1970), Ternovsky et al. (1972), Wong (1975)
152.	<i>N. tabacum</i>	<i>N. rosulata</i>	F	Ternovsky et al. (1976), Ternovsky and Larkina (1978), Larkina (2015, 2017)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (I) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
153.	<i>N. tabacum</i>	<i>N. rotundifolia</i>	asexual	Ilcheva et al. (2001)
154.	<i>N. tabacum</i>	<i>N. simulans</i>	M	Kubo (1985), Tatemichi (1990), Ma et al. (2020)
155.	<i>N. tabacum</i>	<i>N. suaveolens</i>	F, M	premendelian (East (1928)), Kostoff (1943)
156.	<i>N. tabacum</i>	<i>N. umbratica</i>	M	Murthy et al. (2014), Sarala et al. (2023)
157.	<i>N. tabacum</i>	<i>N. velutina</i>	M	Wark (1970), Ma et al. (2020)
158.	<i>N. tabacum</i>	<i>N. wuttkei</i>	M	Laskowska and Berbeć (2012)
159.	<i>N. tabacum</i>	<i>N. eastii</i>	M	Chaplin & Mann, 1961
160.	<i>N. tabacum</i>	<i>N. sylvestris</i>	F, M	East and Hayes (1912), Bellair (1913), Malinowski (1916), Sachs-Skalińska (1917)
161.	<i>N. tabacum</i>	<i>N. kawakamii</i>		Ohashi (1985)
162.	<i>N. tabacum</i>	<i>N. otophora</i>	F	Goodspeed (1945), Ar-Rushdi (1955), Takenaka (1962)
163.	<i>N. tabacum</i>	<i>N. setchellii</i>	F, M	Greenleaf (1941), Goodspeed (1945, 1954)
164.	<i>N. tabacum</i>	<i>N. tomentosa</i>	F, M	Goodspeed and Clausen (1928), McCray (1932), Kostoff (1943)
165.	<i>N. tabacum</i>	<i>N. tomentosiformis</i>	F, M	Brieger (1928), Breisser (1934), Lehmann (1936), Kostoff (1943)
166.	<i>N. tabacum</i>	<i>N. obtusifolia</i>	F, M	Takenaka (1951b, 1956a), Chung et al. (1988), Choi and Lee (1991), Liu and Marubashi (2014)
167.	<i>N. tabacum</i>	<i>N. palmeri</i>	F	Goodspeed (1945), Berbeć et al. (1982)
168.	<i>N. tabacum</i>	<i>N. arentsii</i>	asexual	DeVerna (1984)
169.	<i>N. tabacum</i>	<i>N. glutinosa</i>	F, M	premendelian (East (1928)), first report by Koelreuter (Mayr (1986)), East (1935),
170.	<i>N. tabacum</i>	<i>N. undulata</i>	M	Kehr and Smith (1952), Takenaka (after Goodspeed and Thompson (1959))

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
171.	<i>N. glauca</i>	<i>N. noctiflora</i>	F, M	Goodspeed (1934), Kostoff (1943), Goodspeed (1945)
172.	<i>N. glauca</i>	<i>N. benavidesii</i>	F	Goodspeed (1945)
173.	<i>N. glauca</i>	<i>N. paniculata</i>	F, M	East (1935), Lehmann (1936), Kostoff (1943), Poddubnaya-Arnoldi and Ludkina (1945), Kehr and Smith (1954)
174.	<i>N. glauca</i>	<i>N. raimondii</i>	M	Goodspeed (1954)
175.	<i>N. glauca</i>	<i>N. solanifolia</i>	M	Kostoff (1940), Goodspeed (1945)
176.	<i>N. glauca</i>	<i>N. attenuata</i>	M	Gentscheff (1931)
177.	<i>N. glauca</i>	<i>N. miersii</i>	M	Kostoff (1943)
178.	<i>N. glauca</i>	<i>N. clevelandii</i>	F	Kehr and Smith (1952)
179.	<i>N. glauca</i>	<i>N. quadrivalvis</i>	M	McCray (1932), East (1935) Kostoff (1943), Goodspeed (1945), Kehr and Smith (1952), Meiselman et al. (1961)
180.	<i>N. glauca</i>	<i>N. nudicaulis</i>	M	Goodspeed (1934, 1945)
181.	<i>N. glauca</i>	<i>N. rustica</i>	M	East (1935), Bolsunov (1937), Modilevsky (1937), Kostoff (1939c), Goodspeed (1945), Ilin (1948)
182.	<i>N. glauca</i>	<i>N. debneyi</i>	F, M	Kehr (1951), Lautz (1957), Smith and Abashian (1963)
183.	<i>N. glauca</i>	<i>N. goodspeedii</i>	F	Horton (1981)
184.	<i>N. glauca</i>	<i>N. gossei</i>	M, F	Akada and Hirai (1986) (somatic), Murthy et al. (1998), Murthy and Subbarao (2004), Sarala et al. (2008)
185.	<i>N. glauca</i>	<i>N. megalosiphon</i>	F	Goodspeed (1945)
186.	<i>N. glauca</i>	<i>N. simulans</i>	F	Horton (1981)
187.	<i>N. glauca</i>	<i>N. suaveolens</i>	F, M	East (1935), Goodspeed (1945), Näf (1958), Smith & Abashian, 1963 (amphidiploid synthetic species <i>N. x flindersiensis</i>)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (I) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
188.	<i>N. glauca</i>	<i>N. umbratica</i>	M	Gangadevi et al. ((1987))
189.	<i>N. glauca</i>	<i>N. velutina</i>	F	Jeanes (1999)
190.	<i>N. glauca</i>	<i>N. eastii</i>	M	Kostoff (1943)
191.	<i>N. glauca</i>	<i>N. sylvestris</i>	F	Ternovsky (1962), Takenaka (1965)
192.	<i>N. glauca</i>	<i>N. otophora</i>	F	Takenaka (1953b)
193.	<i>N. glauca</i>	<i>N. tomentosa</i>	F, M	Kostoff (1932), East (1935), Lehmann (1936), Smith (1942)
194.	<i>N. glauca</i>	<i>N. tomentosiformis</i>	F, M	Kostoff (1932), Lehmann (1936), Goodspeed (1945)
195.	<i>N. glauca</i>	<i>N. obtusifolia</i>	M	Murthy et al. (1998)
196.	<i>N. glauca</i>	<i>N. glutinosa</i>	F, M	Kostoff (1930), East (1935), Goodspeed (1945)
197.	<i>N. glauca</i>	<i>N. thyrsoiflora</i>	M	Goodspeed (1945, 1954)
198.	<i>N. noctiflora</i>	<i>N. petunioides</i>	F	Goodspeed and Thompson (1959)
199.	<i>N. noctiflora</i>	<i>N. paniculata</i>	M	Goodspeed (1934), Kostoff (1943), Goodspeed (1945)
200.	<i>N. noctiflora</i>	<i>N. rustica</i>	M	Kostoff (1943), Näf (1958), Takenaka and Yoneda (1964), Kehr and Smith (1954), Wolf (1965), Busconi et al. (2010)
201.	<i>N. petunioides</i>	<i>N. corymbosa</i>	M	Goodspeed and Thompson (1959)
202.	<i>N. petunioides</i>	<i>N. miersii</i>	M	Goodspeed (1945)
203.	<i>N. benavidesii</i>	<i>N. paniculata</i>	M	Goodspeed (1945, 1954)
204.	<i>N. benavidesii</i>	<i>N. raimondii</i>	F	Goodspeed (1945)
205.	<i>N. benavidesii</i>	<i>N. solanifolia</i>	F	Goodspeed (1945)
206.	<i>N. benavidesii</i>	<i>N. rustica</i>	M	Goodspeed (1945)
207.	<i>N. benavidesii</i>	<i>N. glutinosa</i>	F	Goodspeed (1945)
208.	<i>N. benavidesii</i>	<i>N. undulata</i>	M	Goodspeed (1945)
209.	<i>N. cordifolia</i>	<i>N. knightiana</i>	M	Goodspeed (1945, 1954)
210.	<i>N. cordifolia</i>	<i>N. raimondii</i>	F, M	Goodspeed (1945, 1954)
211.	<i>N. cordifolia</i>	<i>N. solanifolia</i>	F, M	Goodspeed (1954)
212.	<i>N. cordifolia</i>	<i>N. undulata</i>	M	Goodspeed (1945)
213.	<i>N. knightiana</i>	<i>N. raimondii</i>	M	Durbin and Uchtyil (1977)
214.	<i>N. knightiana</i>	<i>N. solanifolia</i>	M	Durbin and Uchtyil (1977)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (I) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
215.	<i>N. knightiana</i>	<i>N. rustica</i>	F	Takenaka (1958, 1959, 1962c)
216.	<i>N. knightiana</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1985)
217.	<i>N. knightiana</i>	<i>N. sylvestris</i>	asexual	Menczel et al. (1978)
218.	<i>N. paniculata</i>	<i>N. raimondii</i>	F, M	Kostoff (1940), Goodspeed (1945)
219.	<i>N. paniculata</i>	<i>N. solanifolia</i>	F, M	Goodspeed (1945), Durbin and Uchytíl (1977)
220.	<i>N. paniculata</i>	<i>N. miersii</i>	F, M	Kostoff (1943), Goodspeed (1945)
221.	<i>N. paniculata</i>	<i>N. pauciflora</i>	F	Goodspeed (1934)
222.	<i>N. paniculata</i>	<i>N. quadrivalvis</i>	F	premendelian (East (1928)), East and Hayes (1912)
223.	<i>N. paniculata</i>	<i>N. nudicaulis</i>	F (I)	Yamada et al. (1999) (inviable type III)
224.	<i>N. paniculata</i>	<i>N. rustica</i>	F, M	premendelian (East (1928)), East and Hayes (1912)
225.	<i>N. paniculata</i>	<i>N. gossei</i>	F (I)	Yamada et al. (1999)
226.	<i>N. paniculata</i>	<i>N. suaveolens</i>	F	premendelian (East (1928))
227.	<i>N. paniculata</i>	<i>N. umbratica</i>	F	Subhashini and Gopinath (1974)
228.	<i>N. paniculata</i>	<i>N. velutina</i>	M	Bradley and Goodspeed (1943)
229.	<i>N. paniculata</i>	<i>N. otophora</i>	F	Takenaka (1953b)
230.	<i>N. paniculata</i>	<i>N. tomentosa</i>	F	Lehmann (1936)
231.	<i>N. paniculata</i>	<i>N. tomentosiformis</i>	F, M (I)	Lehmann (1936)
232.	<i>N. paniculata</i>	<i>N. glutinosa</i>	F, M	premendelian (East (1928))
233.	<i>N. paniculata</i>	<i>N. undulata</i>	F, M	Fatalizade (1939), Kostoff (1943), Ternovsky (1962)
234.	<i>N. raimondii</i>	<i>N. solanifolia</i>	F, M	Kostoff (1940, 1943), Goodspeed (1945)
235.	<i>N. raimondii</i>	<i>N. undulata</i>	M	Goodspeed (1945)
236.	<i>N. solanifolia</i>	<i>N. quadrivalvis</i>	M	Goodspeed (1934), Kostoff (1943), Goodspeed (1945)
237.	<i>N. solanifolia</i>	<i>N. rustica</i>	M	Goodspeed (1934, 1945)
238.	<i>N. solanifolia</i>	<i>N. suaveolens</i>	M	East (1928), Kostoff (1943)
239.	<i>N. solanifolia</i>	<i>N. otophora</i>		Berbeć et al. (1976)
240.	<i>N. solanifolia</i>	<i>N. undulata</i>	M	Ternovsky (1962)
241.	<i>N. acuminata</i>	<i>N. corymbosa</i>	M	Goodspeed and Thompson (1959)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species 1 used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
242.	<i>N. acuminata</i>	<i>N. pauciflora</i>	F, M	Kostoff (1943), Goodspeed and Thompson (1959), Takenaka (1965)
243.	<i>N. acuminata</i>	<i>N. undulata</i>	M	Gray (1978)
244.	<i>N. attenuata</i>	<i>N. miersii</i>	F, M	Kostoff (1943), Goodspeed and Thompson (1959), Pearse et al. (2006) Krügel (2010)
245.	<i>N. attenuata</i>	<i>N. clevelandii</i>	M	Goodspeed (1945)
246.	<i>N. attenuata</i>	<i>N. quadrivalvis</i>	M	Goodspeed (1945)
247.	<i>N. attenuata</i>	<i>N. rustica</i>	M	premendelian (East (1928)), Patel (1960). Goodspeed (1945), Tezuka (2012) (lethal)
248.	<i>N. attenuata</i>	<i>N. maritima</i>	M	Goodspeed (1945)
249.	<i>N. attenuata</i>	<i>N. obtusifolia</i>	M	Anssour et al. (2009), Navarro-Quezada et al. (2013), Navarro-Quezada (2014)
250.	<i>N. attenuata</i>	<i>N. undulata</i>	M	Gentscheff (1931), Kostoff (1943), Goodspeed (1954)
251.	<i>N. corymbosa</i>	<i>N. linearis</i>	F	Goodspeed and Thompson (1959)
252.	<i>N. miersii</i>	<i>N. clevelandii</i>	F	Goodspeed (1945)
253.	<i>N. miersii</i>	<i>N. quadrivalvis</i>	F	Kostoff (1940, 1943), Goodspeed (1945)
254.	<i>N. miersii</i>	<i>N. rustica</i>	M	East (1928), Goodspeed (1945), Patel (1960)
255.	<i>N. miersii</i>	<i>N. megalosiphon</i>	F	Kostoff (1940), Goodspeed (1945)
256.	<i>N. miersii</i>	<i>N. suaveolens</i>	F	Goodspeed (1934), Kostoff (1940), Goodspeed (1945)
257.	<i>N. pauciflora</i>	<i>N. rustica</i>	M	Goodspeed (1945)
258.	<i>N. clevelandii</i>	<i>N. quadrivalvis</i>	F, M	Masuta et al. (1993), Kiraly and Schoeltz (1995)
259.	<i>N. clevelandii</i>	<i>N. nudicaulis</i>	F	Goodspeed (1945)
260.	<i>N. clevelandii</i>	<i>N. debneyi</i>	M	Kehr and Smith (1952), Lautz (1957), Smith and Abashian (1963), Smith et al. (1970)
261.	<i>N. clevelandii</i>	<i>N. exigua</i>	F	Kostoff (1943), Goodspeed (1945)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
262.	<i>N. clevelandii</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
263.	<i>N. clevelandii</i>	<i>N. glutinosa</i>	F, M	Kehr and Smith (1952), Lautz (1957), Smith and Abashian (1963), Smith et al. (1970)
264.	<i>N. quadrivalvis</i>	<i>N. nudicaulis</i>	F, M	Goodspeed (1945)
265.	<i>N. quadrivalvis</i>	<i>N. rustica</i>	F, M	premendelian (East (1928)), Maryanovich (1939), Fardy and Hitier (1945)
266.	<i>N. quadrivalvis</i>	<i>N. amplexicaulis</i>	F	Gopinath et al. (1965, 1970)
267.	<i>N. quadrivalvis</i>	<i>N. benthamiana</i>	F	Kostoff (1943), Goodspeed (1945), Apparao and Ramavarma (1974)
268.	<i>N. quadrivalvis</i>	<i>N. debneyi</i>	F	Kehr and Smith (1952)
269.	<i>N. quadrivalvis</i>	<i>N. excelsior</i>	M	Zaitlin and Mundell (2006), Mihaylova-Kroumova et al. (2020)
270.	<i>N. quadrivalvis</i>	<i>N. megalosiphon</i>	F	Kostoff (1943), Goodspeed (1945), Takenaka (1959)
271.	<i>N. quadrivalvis</i>	<i>N. suaveolens</i>	F, M	premendelian (East (1928)), Goodspeed and Clausen (1927), East (1935), Fardy and Hitier (1945), Näf (1958)
272.	<i>N. quadrivalvis</i>	<i>N. eastii</i>	M	Goodspeed (1945)
273.	<i>N. quadrivalvis</i>	<i>N. sylvestris</i>	F	Goodspeed (1934), Kostoff (1943), Goodspeed (1945)
274.	<i>N. quadrivalvis</i>	<i>N. tomentosa</i>	F	East (1935), Kostoff (1943), Goodspeed (1945)
275.	<i>N. quadrivalvis</i>	<i>N. tomentosiformis</i>	F	Kostoff (1943), Goodspeed (1945)
276.	<i>N. quadrivalvis</i>	<i>N. glutinosa</i>	F, M	premendelian (East (1928)), East (1935)
277.	<i>N. quadrivalvis</i>	<i>N. undulata</i>	asexual	Razdan (2003)
278.	<i>N. nesophila</i>	<i>N. repanda</i>	F	Goodspeed (1945)
279.	<i>N. nesophila</i>	<i>N. stocktonii</i>	F	Goodspeed (1945)
280.	<i>N. nesophila</i>	<i>N. umbratica</i>	M	Raju et al. (2008), Murthy et al. (2014)
281.	<i>N. nesophila</i>	<i>N. sylvestris</i>	F	Unnikrishnan et al. (1981)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
282.	<i>N. nudicaulis</i>	<i>N. repanda</i>	F	Kostoff (1943)
283.	<i>N. nudicaulis</i>	<i>N. rustica</i>	F, M	Kostoff (1943), Goodspeed (1954)
284.	<i>N. nudicaulis</i>	<i>N. debneyi</i>	F, M	Goodspeed (1934, 1945)
285.	<i>N. nudicaulis</i>	<i>N. exigua</i>	F, M	Kostoff (1943), Goodspeed (1945)
286.	<i>N. nudicaulis</i>	<i>N. suaveolens</i>	F, M	Kostoff (1943), Goodspeed (1945)
287.	<i>N. nudicaulis</i>	<i>N. sylvestris</i>	F	McCray (1932), Kostoff (1943)
288.	<i>N. nudicaulis</i>	<i>N. tomentosa</i>	F	Kostoff (1940, 1943), Goodspeed (1945, 1954)
289.	<i>N. nudicaulis</i>	<i>N. tomentosiformis</i>	F	Brieger (1929), Goodspeed (1945, 1954)
290.	<i>N. nudicaulis</i>	<i>N. obtusifolia</i>	F, M	Kostoff (1943)
291.	<i>N. nudicaulis</i>	<i>N. palmeri</i>	F	Kostoff (1943), Goodspeed (1945)
292.	<i>N. nudicaulis</i>	<i>N. glutinosa</i>	F	Christoff (1928), Kostoff (1943), Goodspeed (1945)
293.	<i>N. repanda</i>	<i>N. stocktonii</i>	F, M	Kostoff (1943)
294.	<i>N. repanda</i>	<i>N. africana</i>	F	Murthy and Rama Prasad (2000), Murthy and Subhashini (2000)
295.	<i>N. repanda</i>	<i>N. benthamiana</i>	M	Subhashini et al. (1998), Raju et al. (2008, 2009), Murthy et al. (2014)
296.	<i>N. repanda</i>	<i>N. debneyi</i>	M (l)	Yamada et al. (1999)
297.	<i>N. repanda</i>	<i>N. exigua</i>	M	Goodspeed (1945)
298.	<i>N. repanda</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987), Murthy and Rama Prasad (2000)
299.	<i>N. repanda</i>	<i>N. sylvestris</i>	F	Kostoff (1940), Goodspeed (1945), Burk and Dropkin (1961)
300.	<i>N. repanda</i>	<i>N. tomentosiformis</i>	F (l)	Kobori and Marubashi (2004)
301.	<i>N. repanda</i>	<i>N. palmeri</i>	F	Goodspeed (1945), Takenaka (1958, 1959), Takenaka, 1962c, Schweppenhauser et al. (1963)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species 1 used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
302.	<i>N. repanda</i>	<i>N. glutinosa</i>	M	Kehr and Smith (1952)
303.	<i>N. stocktonii</i>	<i>N. sylvestris</i>	F (l)	Muraida and Marubashi (2015)
304.	<i>N. stocktonii</i>	<i>N. tomentosiformis</i>	F (l)	Muraida and Marubashi (2015)
305.	<i>N. rustica</i>	<i>N. benthamiana</i>	F	Sarala et al. (2023)
306.	<i>N. rustica</i>	<i>N. exigua</i>	F	Bolsunov (1970)
307.	<i>N. rustica</i>	<i>N. gossei</i>	F	Takenaka (1965)
308.	<i>N. rustica</i>	<i>N. megalosiphon</i>	F	Takenaka (1965)
309.	<i>N. rustica</i>	<i>N. suaveolens</i>	F	premendelian (East (1928)), Christoff (1938), Goodspeed (1945)
310.	<i>N. rustica</i>	<i>N. sylvestris</i>	asexual	Gleddie et al. (1983)
311.	<i>N. rustica</i>	<i>N. kawakamii</i>	F	Japan Tobacco Inc. (2022)
312.	<i>N. rustica</i>	<i>N. tomentosa</i>	F	Japan Tobacco Inc. (2022)
313.	<i>N. rustica</i>	<i>N. tomentosiformis</i>	F	Kostoff (1929)
314.	<i>N. rustica</i>	<i>N. palmeri</i>	F	Kostoff (1930), Goodspeed (1945)
315.	<i>N. rustica</i>	<i>N. glutinosa</i>	F	Lehmann (1936), Calitz and Milne (1962), Bannikova (1965)
316.	<i>N. rustica</i>	<i>N. undulata</i>	F	Kostoff (1940, 1943); Goodspeed (1945)
317.	<i>N. rustica</i>	<i>N. wigandioides</i>	F	Goodspeed (1934, 1945)
318.	<i>N. africana</i>	<i>N. benthamiana</i>	M	Iizuka et al. (2012)
319.	<i>N. africana</i>	<i>N. fragrans</i>	M	Gerstel et al. (1979)
320.	<i>N. africana</i>	<i>N. gossei</i>	M	Murthy and Subhashini (2000)
321.	<i>N. amplexicaulis</i>	<i>N. excelsior</i>	F	Gopinath et al. (1970), Gangadevi et al. (1987)
322.	<i>N. amplexicaulis</i>	<i>N. gossei</i>	not indicated	Gopinath et al. (1970)
323.	<i>N. amplexicaulis</i>	<i>N. megalosiphon</i>	F	Gopinath et al. (1965, 1970)
324.	<i>N. amplexicaulis</i>	<i>N. occidentalis</i>	M	Gopinath et al. (1965, 1970)
325.	<i>N. amplexicaulis</i>	<i>N. suaveolens</i>	F	Gopinath et al. (1965, 1970)
326.	<i>N. amplexicaulis</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
327.	<i>N. amplexicaulis</i>	<i>N. velutina</i>	F	Gopinath et al. (1965, 1970)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species 1 used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
328.	<i>N. amplexicaulis</i>	<i>N. glutinosa</i>	F	Gopinath et al. (1965, 1970)
329.	<i>N. benthamiana</i>	<i>N. cavivola</i>	F	Williams (1975)
330.	<i>N. benthamiana</i>	<i>N. debneyi</i>	F	Bradley and Goodspeed (1943), Goodspeed (1945), Apparao and Ramavarma (1974)
331.	<i>N. benthamiana</i>	<i>N. excelsior</i>	F, M ²	Fitzmaurice (2002), Tezuka et al. (2021b)
332.	<i>N. benthamiana</i>	<i>N. fragrans</i>	F	Williams (1975)
333.	<i>N. benthamiana</i>	<i>N. gossei</i>	M	Goodspeed (1945), Takenaka (1965), Durbin and Uchytel (1977)
334.	<i>N. benthamiana</i>	<i>N. ingulba</i>	M	Apparao and Ramavarma (1974), Ramavarma and Apparao (1976)
335.	<i>N. benthamiana</i>	<i>N. megalosiphon</i>	F	Goodspeed (1945), Apparao and Ramavarma (1974)
336.	<i>N. benthamiana</i>	<i>N. suaveolens</i>	M	Wheeler (1945), Goodspeed (1945), Apparao and Ramavarma (1974)
337.	<i>N. benthamiana</i>	<i>N. umbratica</i>	M	Gangadevi et al. (1987)
338.	<i>N. benthamiana</i>	<i>N. velutina</i>	F	Horton (1981)
339.	<i>N. benthamiana</i>	<i>N. glutinosa</i>	F	Apparao and Ramavarma (1974)
340.	<i>N. burbridgeae</i>	<i>N. velutina</i>	F	Symon (1984)
341.	<i>N. cavicola</i>	<i>N. debneyi</i>	M	Williams (1975)
342.	<i>N. cavicola</i>	<i>N. umbratica</i>	F, M	Williams (1975), Gangadevi et al. (1987)
343.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. exigua</i>	F, M	Kostoff (1943)
344.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. fragrans</i>	F	Iizuka et al. (2012), Tezuka et al. (2021a)
345.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. goodspeedii</i>	M	Goodspeed (1945)
346.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. maritima</i>	F, M	Kostoff (1943), Goodspeed (1945)
347.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. megalosiphon</i>	M	Goodspeed (1945, 1954)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
348.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. occidentalis</i>	F	Gangadevi et al. (1987)
349.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. simulans</i>	M	Gangadevi et al. (1987)
350.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. suaveolens</i>	F	Kostoff (1943), Williams (1975)
351.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. umbratica</i>	F	Williams (1975), Gangadevi and Satyanarayana (1982)
352.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. velutina</i>	F, M	Gillham et al. (1977)
353.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. sylvestris</i>	F, M (l)	Yamada et al.(1999), Tezuka et al. (2007)
354.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. otophora</i>	F	Takenaka (1959), Takenaka (1962c)
355.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. tomentosiformis</i>	F	Takenaka (1965), Tezuka et al. (2007)
356.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. obtusifolia</i>	F, M	Kostoff (1940, 1943), Goodspeed (1945)
357.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. palmeri</i>	F, M	Kostoff (1943), Goodspeed (1945)
358.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. thyrsoflora</i>		Ohashi et al. (1992)
359.	<i>N. debneyi</i> (<i>forsteri</i>)	<i>N. glutinosa</i>	F, M	Dusseau et al. (1944), Fardy and Hitier (1945), Kehr and Smith (1952)
360.	<i>N. excelsior</i>	<i>N. gossei</i>	M, F	Goodspeed (1945), Murthy et al. (1998)
361.	<i>N. excelsior</i>	<i>N. suaveolens</i>	M	Näf (1958), Takenaka (1965)
362.	<i>N. excelsior</i>	<i>N. velutina</i>	F	Bradley and Goodspeed (1943)
363.	<i>N. excelsior</i>	<i>N. obtusifolia</i>	M	Murthy et al. (1998)
364.	<i>N. excelsior</i>	<i>N. glutinosa</i>	F	Murthy & Rao, 2008
365.	<i>N. exigua</i>	<i>N. goodspeedii</i>	F	Wheeler (1945), Goodspeed (1954)
366.	<i>N. exigua</i>	<i>N. gossei</i>	M	Goodspeed (1945)
367.	<i>N. exigua</i>	<i>N. maritima</i>	F, M	Kostoff (1940), Goodspeed (1945)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (I) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
368.	<i>N. exigua</i>	<i>N. megalosiphon</i>	F	Wheeler (1945), Goodspeed (1945)
369.	<i>N. exigua</i>	<i>N. suaveolens</i>	F	Kostoff (1940), Goodspeed (1945)
370.	<i>N. exigua</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
371.	<i>N. exigua</i>	<i>N. velutina</i>	F, M	Kostoff (1943), Goodspeed (1954)
372.	<i>N. exigua</i>	<i>N. wuttkei</i>	M (I)	Laskowska and Berbeć (2003)
373.	<i>N. fragrans</i>	<i>N. umbratica</i>	M	Williams (1975)
374.	<i>N. fragrans</i>	<i>N. glutinosa</i>	M	Williams (1975)
375.	<i>N. goodspeedii</i>	<i>N. megalosiphon</i>	F	Goodspeed (1945)
376.	<i>N. goodspeedii</i>	<i>N. rotundifolia</i>	F	Goodspeed (1945)
377.	<i>N. goodspeedii</i>	<i>N. suaveolens</i>	F	Wheeler (1945), Goodspeed (1945), Takenaka (1965)
378.	<i>N. goodspeedii</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
379.	<i>N. gossei</i>	<i>N. maritima</i>	M	Wheeler (1945), Goodspeed (1954)
380.	<i>N. gossei</i>	<i>N. megalosiphon</i>	F	Kostoff (1943), Goodspeed (1945, 1954)
381.	<i>N. gossei</i>	<i>N. suaveolens</i>	M	Kostoff (1943), Goodspeed (1945), Takenaka (1952b)
382.	<i>N. gossei</i>	<i>N. occidentalis</i>	M	Wheeler (1945), Goodspeed (1945, 1954)
383.	<i>N. gossei</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
384.	<i>N. gossei</i>	<i>N. velutina</i>	M	Wheeler (1945), Goodspeed (1945)
385.	<i>N. gossei</i>	<i>N. eastii</i>	M	Kostoff (1943), Goodspeed (1945, 1954)
386.	<i>N. gossei</i>	<i>N. glutinosa</i>	M	Murthy et al. (1998)
387.	<i>N. hesperis</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
388.	<i>N. ingulba</i>	<i>N. megalosiphon</i>	F	Ramavarma and Apparao (1976)
389.	<i>N. ingulba</i>	<i>N. velutina</i>	F	Ramavarma and Apparao (1976)
390.	<i>N. ingulba</i>	<i>N. glutinosa</i>	F	Subhashini and Unnikrishnan (1978)
391.	<i>N. maritima</i>	<i>N. megalosiphon</i>	F	Goodspeed (1945, 1954)
392.	<i>N. maritima</i>	<i>N. suaveolens</i>	F, M	Kostoff (1939a), Goodspeed (1945)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
393.	<i>N. maritima</i>	<i>N. velutina</i>	F, M	Kostoff (1943), Goodspeed (1945)
394.	<i>N. maritima</i>	<i>N. wuttkei</i>	M	Laskowska and Berbeć (2003)
395.	<i>N. maritima</i>	<i>N. eastii</i>	M	Kostoff (1939a, 1940), Goodspeed (1945, 1954)
396.	<i>N. maritima</i>	<i>N. undulata</i>	F	Goodspeed (1945)
397.	<i>N. megalosiphon</i>	<i>N. suaveolens</i>	F, M	Kostoff (1940), Goodspeed (1945), Durbin and Uchytíl (1977)
398.	<i>N. megalosiphon</i>	<i>N. umbratica</i>	F	Subhashini (1975), Gangadevi et al. (1987)
399.	<i>N. megalosiphon</i>	<i>N. velutina</i>	M	Wheeler (1945), Goodspeed (1945)
400.	<i>N. megalosiphon</i>	<i>N. eastii</i>	M	Kostoff (1943), Goodspeed (1945)
401.	<i>N. megalosiphon</i>	<i>N. glutinosa</i>	F, M	Satyanarayana and Subhashini (1964), Subhashini et al. (1985)
402.	<i>N. occidentalis</i>	<i>N. simulans</i>	F, M	Gangadevi et al. (1987)
403.	<i>N. occidentalis</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
404.	<i>N. occidentalis</i>	<i>N. sylvestris</i>	M(l), F	Tezuka and Marubashi (2012), Kawaguchi et al. (2021)
405.	<i>N. occidentalis</i>	<i>N. tomentosiformis</i>	F	Tezuka and Marubashi (2012), Kawaguchi et al. (2021)
406.	<i>N. occidentalis</i>	<i>N. undulata</i>	M	Takenaka (1965)
407.	<i>N. rosulata</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
408.	<i>N. rotundifolia</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
409.	<i>N. rotundifolia</i>	<i>N. velutina</i>	M	Bradley & Goodspeed, 1943, Goodspeed (1945)
410.	<i>N. simulans</i>	<i>N. umbratica</i>	F	Gangadevi et al. (1987)
411.	<i>N. suaveolens</i>	<i>N. velutina</i>	M	Goodspeed (1945, 1954), Chase et al. (2021)
412.	<i>N. suaveolens</i>	<i>N. wuttkei</i>	M (l)	Laskowska and Berbeć (2003)
413.	<i>N. suaveolens</i>	<i>N. eastii</i>	M	Kostoff (1939a), Goodspeed (1945, 1954)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
414.	<i>N. suaveolens</i>	<i>N. sylvestris</i>	asexual, F (l)	Fluhr (1983), Inoue et al. (1996)
415.	<i>N. suaveolens</i>	<i>N. tomentosiformis</i>	F	Inoue et al. (1996)
416.	<i>N. suaveolens</i>	<i>N. glutinosa</i>	F, M	premendelian (East (1928)), Dusseau et al. (1943), Goodspeed (1945), Gupta and Gupta (1973)
417.	<i>N. umbratica</i>	<i>N. velutina</i>	M	Gangadevi et al. (1987)
418.	<i>N. umbratica</i>	<i>N. kawakamii</i>	F	Japan Tobacco Inc. (2021)
419.	<i>N. umbratica</i>	<i>N. glutinosa</i>	F	Subhashini (1974)
420.	<i>N. velutina</i>	<i>N. wuttkei</i>	M	Laskowska and Berbeć (2003)
421.	<i>N. velutina</i>	<i>N. eastii</i>	F, M	Kostoff (1943)
422.	<i>N. sylvestris</i>	<i>N. kawakamii</i>	F	Ogura (1980)
423.	<i>N. sylvestris</i>	<i>N. otophora</i>	F, M	Goodspeed (1945, 1954), Takenaka (1954, 1956a)
424.	<i>N. sylvestris</i>	<i>N. setchellii</i>	F	Greenleaf (1942), Goodspeed (1945)
425.	<i>N. sylvestris</i>	<i>N. tomentosa</i>	F, M	Goodspeed (1934, 1945), East (1935), Takenaka (1956a)
426.	<i>N. sylvestris</i>	<i>N. tomentosiformis</i>	F, M	Kostoff (1930), Goodspeed (1945)
427.	<i>N. sylvestris</i>	<i>N. obtusifolia</i>	F	Liu and Marubashi (2014)
428.	<i>N. sylvestris</i>	<i>N. glutinosa</i>	F, M	Goodspeed (1934, 1945), East (1935), Fardy and Hitier (1945)
429.	<i>N. sylvestris</i>	<i>N. undulata</i>	cybrid	Aviv et al. (1984)
430.	<i>N. kawakamii</i>	<i>N. otophora</i>	F	Ogura (1980)
431.	<i>N. kawakamii</i>	<i>N. tomentosa</i>	F	Ogura (1980)
432.	<i>N. kawakamii</i>	<i>N. tomentosiformis</i>	F	Ogura (1980)
433.	<i>N. otophora</i>	<i>N. setchellii</i>	F, M	Goodspeed (1945), Bawolska et al. (1978)
434.	<i>N. otophora</i>	<i>N. tomentosa</i>	F	Goodspeed (1945)
435.	<i>N. otophora</i>	<i>N. tomentosiformis</i>	M	Gerstel and Burns (1974)
436.	<i>N. otophora</i>	<i>N. obtusifolia</i>	M (l)	Yamada et al. (1999)
437.	<i>N. otophora</i>	<i>N. glutinosa</i>	M	Goodspeed (1945)
438.	<i>N. setchellii</i>	<i>N. tomentosa</i>	M	Goodspeed (1945)
439.	<i>N. setchellii</i>	<i>N. tomentosiformis</i>	M	Clausen (1932), Goodspeed (1945)

(continued)

Table 7.1 (continued)

No.	Hybrid combination		Species I used as: F (female parent); M (male parent) (l) denotes lethal hybrid	Reported by:
	Species 1	Species 2		
440.	<i>N. setchelli</i>	<i>N. obtusifolia</i>	M	Goodspeed (1945)
441.	<i>N. setchellii</i>	<i>N. palmeri</i>	M	Goodspeed (1945)
442.	<i>N. tomentosa</i>	<i>N. tomentosiformis</i>	F	Goodspeed (1945, 1954)
443.	<i>N. tomentosa</i>	<i>N. obtusifolia</i>	M	Goodspeed (1934, 1945), Kostoff (1943)
444.	<i>N. tomentosa</i>	<i>N. palmeri</i>	M	Kostoff (1943), Goodspeed (1954)
445.	<i>N. tomentosa</i>	<i>N. glutinosa</i>	M	Goodspeed (1934), Greenleaf (1941), Goodspeed (1945)
446.	<i>N. tomentosiformis</i>	<i>N. obtusifolia</i>	M	Goodspeed and Bradley (1942), Kostoff (1943), Goodspeed (1954), Liu and Marubashi (2014)
447.	<i>N. tomentosiformis</i>	<i>N. palmeri</i>	M	McCray (1933), Kostoff (1943)
448.	<i>N. tomentosiformis</i>	<i>N. glutinosa</i>	M	Kostoff (1932), Goodspeed (1945, 1954)
449.	<i>N. obtusifolia</i>	<i>N. palmeri</i>	F, M	Goodspeed (1945), Takenaka (1959, 1962c)
450.	<i>N. obtusifolia</i>	<i>N. glutinosa</i>	M, F	Krishnamoorthy and Bhat (1957), Appa Rao and Krishnamurthy (1963), Murthy et al. (1998)
451.	<i>N. arentsii</i>	<i>N. undulata</i>	M	Goodspeed (1945, 1954)
452.	<i>N. arentsii</i>	<i>N. wigandioides</i>	F	Goodspeed (1945)
453.	<i>N. glutinosa</i>	<i>N. wigandioides</i>	F	Elvers (1934), Goodspeed (1945)
454.	<i>N. glutinosa</i>	<i>N. undulata</i>	M	Goodspeed (1954)
455.	<i>N. undulata</i>	<i>N. wigandioides</i>	F	Goodspeed (1945, 1954)

¹hybrid seeds were obtained but plants were not attempted to be grown therefrom.

²amphidiploid form of that hybrid is known as *Nicotiana excelsiana*.

³amphidiploid 4x (*N. longiflora* x *N. tabacum*) included in the study

⁴amphidiploid 4x *N. tabacum* x *N. gossei* included in the study

⁵regular sexual hybrid mentioned once but with no details

⁶somatic sterile aneuploids

1. five reports on the intrasectional hybrids with *N. raströensis* – the hybrids did not develop beyond the seed stage and seeds were not sown. The author assumes that in this particular case successful fertilization and viable seeds may substitute for an actual living hybrid plant since there has been no report on post-zygotic crossability barriers between 9-chromosome species of the section *Alatae*;
2. reporting on 12 lethal hybrids that may have not actually been grown past the seedling stage. The argument is that those hybrids mostly belong to lethality type II, the crossability barrier that has been repeatedly demonstrated to be removable by tissue culture and, more recently, by chemical treatment and genetic engineering. Those two categories put aside, the inventory still includes 434 viable hybrid combinations including a few that may have not grown to full maturity.

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