

ABCbot

Acta Biologica Cracoviensia
Series Botanica

SUPPLEMENTARY MATERIAL

Işık et al., ABCbot 61(1) 2019

POLLEN MORPHOLOGY IN THE TRIBE *NIGELLEAE* (RANUNCULACEAE): A WORLDWIDE PALYNOLOGICAL INVESTIGATION INTO THE SPECIES

S1. Specimens investigated

S2. TABLE 1. Pollen morphological characters for each specimen studied. P polar axis, E equatorial axis, M mean, SD ± standard deviation, V ranges, TRZC trizonocolpate, NONTR non-trizonocolpate, OB-SPH oblate-spheroidal, P-SPH prolate-spheroidal, SP subprolate, Clt colpus width, ECH echinate, MECH micro-echinate, MECH-PU micro-echinate-punctate.

S3. UPGMA cluster analysis derived from pollen type and shape, the mean polar and equatorial axes, apocolpium index, the mean length of colpus based on Gower's coefficient. Bootstrap support values are indicated on the branches.

Tribe ***Nigelleae*** Schröd.

Komarofia Kuntze

K. integrifolia (Regel) Lemos Pereira

Iran Horasan: Djeneran et Kujan, *K. H. Rechinger* 4704 (HUB); between Chamanbid and Bojnurd; FUMH 28909 (HUB). **Afghanistan:** Nordost-Afghanistan, Gipfelregion eines Kalk-Limonit-Berges bei Dschebel-Seradsch, 1730 m, A. *Gilli* 827.

K. bucharica sensu lato (s. l.) - **Tajikistan:** 526 (E-photo!), W Herbarium no.14384.

Garidella L.

G. nigellastrum L.

Turkey B4 Kırşehir: Ömerhacı Village, 990 m, gypsiferous slopes, *B. Mutlu* 5061 (HUB); **C5 Mersin:** Mut, Çamlıca Village, Near Akseki, 307 m, A. A. *Dönmez* (AAD) 15965 (HUB); **C6 Antakya:** Osmaniye, 2 km from Toprakkale to İskenderun, stony slopes, 58 m, AAD 15977 (HUB); **C8 Siirt:** 5 km from Siirt to Eruh, AAD 11174-B. *Mutlu* (HUB). **Cyprus Gazimagusa:** 3 km from Turnalar Village to Kantar, openings in *Juniperus-Pistacia* scrub, 165 m, AAD 15928 (HUB); 5 km from Büyükkonuk Village to Kalıca, in *Ceratonia siliqua* orchard, 137 m, AAD 15934 (HUB); **Güzelyurt:** Lefke, Cengizköy, clayey soil, 62 m, AAD 15948 (HUB). **Syria Aleppo:** Afrin, Questal Jindu Barsa Mountain, limestone slopes, in *Sarcopoterium* scrub, AAD 15453 (HUB).

G. unguicularis Lam.

Turkey C6 Kahramanmaraş: Ahır Mountain, near Küçükgöl, 1400-1700 m, Z. Aytaç 4867-H. *Duman* (HUB); **C8 Diyarbakır:** Çermik, around Sinek Village, A. *Güner* 6488 (HUB). **Syria Damascus:** Das, crop field margin, rocky slopes, AAD 15437-B. A. *Sawman* (HUB); **Damascus:** Bloudan, slopes of Yunnan Mountain, 1740 m, AAD 15440 (HUB); **Aleppo:** Afrin, Questal Jindu, Barsa Mountain, limestone slopes, in *Sarcopoterium* scrub, 623 m, AAD 15454.

Nigella L.

Sect. ***Erobathos*** DC.

N. damascena L.

Greece: Nomos Kikladon, 50-70 m, A. *Tsopra* (HUB). **Turkey A1 Edirne:** Enez, 2 km to Enez, *Quercus* forest, 150 m, AAD 8718 (HUB). **A3 Düzce:** Akçakoca, A. D. *Koca* 1918 (HUB).

N. elata Boiss.

Turkey A3 Bolu: 14 km from Kıbrıscık to Bolu, roadside, in openings of *Juniperus excelsa* scrub, AAD 17617-Z. *Uğurlu* (HUB); **B2 Balıkesir:** 15 km to Saruhan, in *Quercus* scrub, 399 m, AAD 14994 (HUB); **C3 Isparta:** Eğirdir, Yukarıgökdere, in *Quercus* forest, 1700 m, H. *Peşmen*-A. *Güner* 1805 (HUB).

Sect. ***Nigellaria*** DC.

N. gallica Jord.

Portugal Vale de Rio: Coimbra, J. Paiva, (COI) Herbarium No 8231; K.H. Rechinger 1373 (COI). **Spain Ustpyranen:** Lerida Segre-Tal öst. Seo de Urgel, 6 km O Martinet, ca. 1050 m, silicate, F. Krendl 766, (W) Herbarium No 01215.

N. papillosa G.López subsp. **atlantica** (Murb.) Amich ex G.López

Portugal Arrodores de Lias: ma estada Moura Serpa, A.Q.Fernandez et al., 8688 (COI). **Tunisia Scttat:** 2 km W of Kasba-de-Boulaouane, SW of Boulaouane an der StraBe von Sidi-Bennour nach Scttat, 240 m, Acker, Wegrand, D. Podlech 53897 (W).

N. arvensis L. var. *arvensis*

Greece Ikaria: 3 km NW of Ag. Ksrikos, 500-800 m, R.v.Bothmer & A. Strid 21809 (W) Herbarium No: 21775. **Kasos:** roadside, near the harbor village of Ophris, 20 m, R.V. Bothmer sn (W); **Piraeus:** Andikithira, K. H. Rechinger (recorded as Strid) 24423 (W); **Paros:** Island, Nausa Town, seashore, 15 m, AAD 15460-T. Karamplians (HUB). **Paros:** Island, near Vukakos beach, crop field margin, in *Quercus* scrub, limestone, 12 m, AAD 15462 (HUB); **Pyreaus:** 157 m, AAD 15474 (HUB); **Crete:** Khania, stable sand and dunes, c.1.5 km N from the Monastery of Au. Christokalatitis, 1-2 m, A.Strid 4042 (W). **Turkey A1 Edirne:** Enez, around Gülcavuş Village, in *Pinus* forest openings, 25 m, AAD 14996-B. Mutlu (HUB); Enez, from Edirne to Havsa, between Havsa and Karakası, steppe, 96 m, AAD 15001-B. Mutlu; **A1 Kırklareli:** Pınarhisar, 2 km to Sergen, 362 m, AAD 15005-B. Mutlu; **B5 Yozgat:** P. H. Davis-T. Ekim 68596 (HUB); **C3 Isparta:** Gönen, near Subaşı, *Quercus* scrub, 1227 m, AAD 14990. **Lebanon Bekaa Valley:** Hermal, dry *Artemisia* steppes, 698 m, AAD 17014 (HUB).

N. arvensis L. var. *aristata* s. l.

Greece Siros: Island, Kini Village, around Saint Varvara Monastery, dry *Sarcopoterium-Pistacia-Corydothymus* phrygana, limestone, 176 m, AAD 15459 (HUB); **Rhodes:** 2 km S of Faliraki Village, in *Pistacia*-Olive scrub openings, 5 m, AAD 15468-T.Karamplians (HUB); Around Kalithera mare Resort Faliraki road, *Pistacia* scrub, AAD 15469 - T. Karamplians (HUB). **Turkey A1 Edirne:** Keşan, around Mecidiye Military Zone, dunes, 1 m, AAD 7203 (HUB); **A4 Ankara:** between İrmak and Kalecik, 10 km to Kalecik, steppe, 700 m, AAD 3536- H. Şağban-A. Kahraman (HUB); **B3 Afyon:** Çay, Karamuk Lake, around Koçbey Village, steppe, 1050 m, AAD 2920 (HUB); **B4 Kırıkkale:** Delice, 2 km to Ortaklıla, in crop fields openings, gypsiferous slopes, 633 m, AAD 14847 (HUB); **B5 Niğde:** Ulukışla, near Ahmet Şükrü Farm, gypsiferous slopes, steppe, 1478 m, AAD 15955-Z. Uğurlu (HUB); **B6 Sivas:** Malatya road, around the junction of Altınyayla, crop field margin, transition to steppe, 1432 m, AAD 14977 (HUB); **B7 Sivas:** Divriği, Karasar Passage, steppe slopes, AAD 12398-I. A. Shehbaz-M. Menke (HUB); **C5 Mersin:** 1 km from Bozyazı to Silifke, Tosaklar Village, in *Quercus-Pistacia* scrub openings, 1 m, AAD 16164-Z.Uğurlu (HUB); **C5 Hatay:** Samandağ coast, near the entrance of Asi River, beach, 0 m, AAD 16975-G. Zare (HUB). **Syria Swedaa:** Tel Hadid, Thali Village, 871 m, AAD 15445 (HUB); from Silamiya to Rsafa, near Iterya Village, AAD 15449 (HUB); **Teltemur:** Desert, 40 km from Rakkat, AAD 15451 (HUB); Desert 40 km from Rakkato Teltemur, 393 m, AAD 15452 (HUB).

N. koyuncii Dönmez & Uğurlu

Turkey A5 Sinop: Boyabat, 1.4 km to Gökcəağasakızı, 442 m, AAD 17223-Z. Uğurlu (HUB).

N. segetalis M.Bieb.

Turkey A4 Çankırı: Korgun, Aktaş Village, roadside, 1282 m, AAD 14403 (HUB); **A5 Sivas:** Suşehri, from Suşehri to Gölova, 1 km to Karayakup Village, crop field margin, 1375 m, AAD 14860 (HUB); **A8 Erzurum:** Gümüşhane road, 1 km to Pınarkapan Village, gypsiferous stony slopes, 1680 m, AAD 12342-I.A. Shehbaz-M. Menke (HUB); **A9 İğdır:** Tuzluca, Turabi Village, Aras Valley, 1006 m, AAD 11411-B. Mutlu (HUB); **B5 Nevşehir:** Sulusray, 1100 m, eroded slopes, M.Vural et al. (HUB); **B8 Muş:** Yaygın, Nadaslı Village, burnt crop fields, 1275 m, AAD 14952 (HUB); **B9 Ağrı:** Doğubeyazit, AAD 15502.

N. sativa L.

Turkey B3 Isparta: Şarkikaraağaç, 1150 m, *B. Mutlu* 1780 (HUB); **C2 Denizli:** Altınayyla, AAD 10915-E. Oybak Dönmez (HUB); **C4 Konya:** Ermenek, *H. Sümbül* 2953 (HUB).

N. turcica Dönmez & Mutlu

Turkey A9 İğdır: Tuzluca, 1 km to Turabi Village, 1006 m, AAD 10833-B. *Mutlu* (HUB); **B9 Ağrı:** Dogübeyazıt, AAD 15499 (HUB).

N. stellaris Boiss.

Turkey C4 İçel: Ermenek-Mut road, 200 m, *M. Koyuncu* 4191-G. *Sezik-F. İzgü* (AEF); **C6 K.Maraş:** Süleymanlı, 800 m, *B. Yıldız* 2652 (HUB).

N. fumariifolia Kotschy

Greece Rhodes: Paros, South of Ventia, *Runemark et al.* 41441 (E! photo). **Cyprus:** Iter Cyprinum, *Sintenis et Rigo* (1880) sn, Nu mountosis supra Lefkoniko, (COI).

Sect. Nigellastrum (Fabricus) DC.

N. orientalis L.

Turkey B8 Bitlis: Hizan, Tatik Plain, 1850 m, AAD 8047 (HUB); **C6 Kahramanmaraş:** Süleymanlı, Okkayası, 1200 m, *B. Yıldız* 1847 (HUB). **Syria Swedaa:** 20 km from Azraa to Swedaa, 776 m, AAD 15444 (HUB).

N. oxypetala Boiss. var. ***oxypetala***

Turkey A8 Erzurum: Gümüşhane road, 1 km to Pınarkapan Village, gypsiferous slopes, 1680 m, AAD 12341-I.A.Shehbaz-M.Menke (HUB); **B8 Bingöl:** Yolçatı, 2 km from Yolçatı to Solhan, 1170 m, AAD 14961 (HUB); **C9 Şırnak:** 26 km from the junction of Uludere road to Beytüşşebab, 1520 m, AAD 11242 (HUB); **C9 Şırnak:** Uludere, Taşdelen Village, AAD 15486 (HUB). **Syria Damascus:** Das, from Surgaya to Bloudan, around the city, AAD 15439 (HUB); **Swedaa:** Shaf Village, crop field margin, volcanic rocky fields, 1524 m, AAD 15447 (HUB). **Lebanon Bekaa:** Yammounek, crop field margin, 1393 m, AAD 17026 (HUB).

N. oxypetala Boiss. var. ***latisecta*** s. l.

Turkey A5 Sivas: Suşehri, Suşehri to Gölova road, 1 km to Karayakup Village, crop field margin, 1375 m, AAD 14857 (HUB).

N. oxypetala Boiss. var. ***lancifolia*** s. l.

Turkey B4 Niğde: Ulukışla, 5 km from Ulukışla to Ereğli, crop field, 1480 m, AAD 15960 (HUB).

N. ciliaris DC.

Syria Swedaa: 20 km from Azraa to Swedaa, volcanic area, red soil, 776 m, AAD 15443 (HUB); *Plantae Syriae borealis*, Mounts Nussiry, Qin Hala Kırın, 770 m, June 1910, *M. Haradjian* 3511 (W!).

Taxa	Specimen	Pollen type	P (μm)			E (μm)		
			M	SD	V	M	SD	V
Komaroffia								
<i>K. integrifolia</i>	Iran: <i>K. H. Rechinger</i> 4704	TRZC & NONTR	31.09	± 2.10	27-36	29.79	± 2.45	23-35
	Iran: FUMH 28909	TRZC & NONTR	29.55	± 0.95	25-35	29.08	± 0.89	23.75-33.75
	Afghanistan: <i>A. Gilli</i> 827	TRZC & NONTR	35.58	± 0.68	31.25-38.75	30.65	± 0.53	27.5-35
<i>K. bucharica</i>	Tajikistan: W 14384	TRZC	37.69	± 3.6	32.5-48	36.98	± 3.64	32.5-49
Garidella								
<i>G. nigellastrum</i>	Turkey B4 Kırşehir: <i>B. Mutlu</i> 5061	TRZC	31.35	± 0.5	30-32.5	25.6	± 0.47	22.5-27.5
	Turkey C5 Mersin: AAD 15965	TRZC	29.05	± 0.39	27.5-31.25	26.08	± 0.40	23.75-27.5
	Turkey C6 Antalya: AAD 15977	TRZC	29.3	± 0.70	26.25-35	24.75	± 0.45	22.5-28.75
	Turkey C8 Siirt: AAD 11174- <i>B. Mutlu</i>	TRZC	31.25	± 0.5	30-32.5	23.6	± 0.5	22.5-25
	Cyprus: AAD 15928	TRZC & NONTR	29.2	± 0.64	25-32.5	25.83	± 0.61	22.5-30
	Cyprus: AAD 15934	TRZC	29.38	± 0.64	25-35	23.63	± 0.69	21.25-30
	Cyprus: AAD 15948	TRZC	27.63	± 0.80	25-32.5	22.43	± 0.82	20-28.75
	Syria: AAD 15453	TRZC	31.9	± 0.72	27.5-36.25	26.35	± 0.90	22.5-32.5
<i>G. unguicularis</i>	Turkey C6 K.Maraş: Z. Aytaç 4867- <i>H. Duman</i>	TRZC & NONTR	30.6	± 0.55	27.5-32.5	25.35	± 0.49	22.5-27.5
	Turkey C8 Diyarbakır: <i>A. Güner</i> 6488	TRZC	30.75	± 0.58	27.5-32.5	23.65	± 0.50	22.5-25
	Syria: AAD 15437- <i>B.A. Sawman</i>	TRZC	30.78	± 0.6	28.75-33.75	27.1	± 0.58	23.75-30
	Syria: AAD 15440	TRZC & NONTR	28.4	± 0.53	26.25-31.25	26.93	± 0.54	23.75-31.25
	Syria: AAD 15454	TRZC	30.23	± 0.82	26.25-35	23.1	± 0.54	20-25
Nigella								
Sect. Erobathos								
<i>Nigella damascena</i>	Greece: <i>A. Tsopra</i>	TRZC	44.73	± 1.30	37.5-53.75	44.05	± 1.44	36.25-53.75
	Turkey A1 Edirne: AAD 8718	TRZC & NONTR	38.8	± 0.57	35-41.25	41.55	± 0.61	37.5-45
	Turkey A3 Düzce: <i>Aslı Doğru Koca</i> 1918	TRZC & NONTR	44.5	± 1.30	37.5-52.5	46.25	± 1.3	40-52.5
<i>N. elata</i>	Turkey A3 Bolu: AAD 17617- <i>Z. Uğurlu</i>	TRZC	38.3	± 0.89	33.75-42.5	38.55	± 0.78	35-42.5
	Turkey B2 Balıkesir: AAD 14994	TRZC & NONTR	37.8	± 0.49	35-40	37.7	± 0.70	32.5-41.25
	Turkey C3 Isparta: <i>H. Peşmen-A. Güner</i> 1805	TRZC & NONTR	37.9	± 1.03	32.5-45	38.3	± 0.99	32.5-42.5
Sect. Nigellaria								
<i>N. gallica</i>	Portugal: <i>J. Paiva</i> , COI 8231	TRZC & NONTR	44.83	± 0.55	41.25-47.5	39.53	± 0.44	37.5-42.5
	Portugal: <i>K. H. Rechninger</i> 1373	TRZC & NONTR	41.88	± 0.65	38.75-45	42.53	± 0.74	37.5-46.25
	Spain: <i>F. Krendl</i> 766	TRZC & NONTR	41.3	± 0.87	37.5-47.5	42.48	± 0.67	38.75-47.5

Taxa	Specimen	Pollen Type	P (μm)			E (μm)		
			M	SD	V	M	SD	V
<i>N. papillosa</i> subsp. <i>atlantica</i>	Portugal: A.Q. Fernandez et al. 8688	TRZC	45.43	± 1.06	40-50	39.73	± 0.67	35-42.5
	Tunisia: D. Podlech 53897	TRZC	39.35	± 0.55	37.5-42.5	39.98	± 0.38	37.5-42.5
<i>N. arvensis</i> var. <i>arvensis</i>	Greece: R.v. Bothmer & A. Strid 21809	TRZC	40.18	± 0.90	35-45	40.03	± 0.80	36.25-43.75
	Greece: R.V. Bothmer sn	TRZC	40.08	± 0.96	33.75-45	39.58	± 1.02	33.75-43.75
	Greece: K. H. Rechinger (recorded as Strid) 24423	TRZC	35.95	± 0.70	32.5-41.25	37.1	± 0.53	33.75-40
	Greece: AAD 15460-T. Karamplians	TRZC & NONTR	34.43	± 0.38	32.5-37.5	36.3	± 0.40	33.75-38.75
	Greece: AAD 15462	TRZC	34.55	± 0.71	31.25-40	35.43	± 0.73	31.25-41.25
	Greece: AAD 15474	TRZC	33.38	± 0.72	30-38.75	34.73	± 0.63	31.25-37.5
	Greece: A. Strid 4042	TRZC & NONTR	35.43	± 0.70	32.5-38.75	37.55	± 0.54	33.75-40
	Turkey A1 Edirne: AAD 14996-B. Mutlu	TRZC	35.33	± 0.71	31.25-40	34.95	± 0.91	28.75-40
	Turkey A1 Edirne: AAD 15001-B. Mutlu	TRZC	34.93	± 0.50	32.5-37.5	35.25	± 0.75	30-38.75
	Turkey A1 Kırklareli: AAD 15005- B. Mutlu	TRZC	33.03	± 0.45	31.25-35	33.7	± 0.61	30-36.25
<i>Nigella arvensis</i> var. <i>aristata</i>	Turkey B5 Yozgat: P.H. Davis-T. Ekim 68596	TRZC	37.3	± 0.72	35-40	38.9	± 0.76	35-42.5
	Turkey C3 Isparta: AAD 14990	TRZC	34.55	± 0.38	32.5-35.25	35.07	± 0.43	32.5-37.5
	Lebanon: AAD 17014	TRZC	35.88	± 2.24	25-51.25	31.75	± 2.67	25-50
	Greece: AAD 15459	TRZC	33.45	± 0.47	31.25-37.5	34.73	± 0.46	32.5-37.5
	Greece: AAD 15468-T. Karamplians	TRZC	34.05	± 0.5	31.25-36.25	35.48	± 0.55	31.25-37.5
	Greece: AAD 15469-T. Karamplians	TRZC & NONTR	36.4	± 0.56	33.75-40	37.65	± 0.55	33.75-40
	Turkey A1 Edirne: AAD 7203	TRZC	36.88	± 0.80	32.5-40	37.08	± 0.86	32.5-41.25
	Turkey A4 Ankara: AAD 3536-H. Sağban-A. Kahraman	TRZC & NONTR	35.28	± 0.52	32.5-37.5	36.4	± 0.61	32.5-40
	Turkey B3 Afyon: AAD 2920	TRZC	36.6	± 0.59	35-40	38.1	± 0.59	35-42.5
	Turkey B4 Kırıkkale: AAD 14847	TRZC	34.8	± 0.72	32.5-40	36.13	± 0.61	33.75-40
<i>Nigella koyuncui</i>	Turkey B5 Niğde: AAD 15955-Z. Uğurlu	TRZC	34.9	± 0.96	30-41.25	36.6	± 1.04	31.25-42.5
	Turkey B6 Sivas: AAD 14977	TRZC & NONTR	38.55	± 0.45	36.25-40	39.57	± 0.46	35-42.5
	Turkey B7 Sivas: AAD 12398-I.A. Shehbaz-M. Menke	TRZC	37.68	± 0.57	35-41.25	38.25	± 0.68	35-41.25
	Turkey C5 Mersin: AAD 16164-Z. Uğurlu	TRZC & NONTR	37.23	± 0.53	35-40	38.5	± 0.49	36.25-41.25
	Turkey C5 Hatay: AAD 16975-G. Zare	TRZC	39.23	± 0.55	36.25-42.5	39.85	± 0.6	36.25-42.5
	Syria: AAD 15445	TRZC & NONTR	37.58	± 0.51	35-40	37.63	± 0.42	35-40
	Syria: AAD 15449	TRZC & NONTR	35.28	± 0.57	31.25-38.75	36.53	± 0.54	33.75-40
	Syria: AAD 15451	TRZC & NONTR	35.78	± 0.71	32.5-40	36.6	± 0.67	32.5-40
<i>Nigella koyuncui</i>	Syria: AAD 15452	TRZC & NONTR	38.4	± 1.13	33.75-46.25	38.6	± 1.05	33.75-45
	Turkey A5 Sinop: AAD 17223-Z. Uğurlu	TRZC	36.03	± 0.80	32.5-40	37.75	± 0.70	35-41.25

Taxa	Specimen	Pollen Type	P (μm)			E (μm)		
			M	SD	V	M	SD	V
<i>N. segetalis</i>	Turkey A4 Çankırı: AAD 14403	TRZC TRZC & NONTR TRZC & NONTR TRZC TRZC TRZC & NONTR TRZC & NONTR	37.48	±0.55	35-41.25	38.38	±0.55	36.25-42.5
	Turkey A5 Sivas: AAD 14860		34.00	±0.59	32.5-40	34.90	±0.60	32.5-40
	Turkey A8 Erzurum: AAD 12342-I.A. Shehbaz- M. Menke		34.45	±0.48	32.5-36.25	36.85	±0.46	35-38.75
	Turkey A9 İğdır: AAD 11411-B. Mutlu		34.37	±0.73	30-37.5	35.22	±0.89	31.25-40
	Turkey B5 Nevşehir: M. Vural et al.		36.2	±0.76	32.5-40	36.5	±0.75	32.5-40
	Turkey B8 Muş: AAD 14952		34.85	±0.81	30-40	35.6	±0.74	32.5-40
	Turkey B9 Ağrı: AAD 15502		33.58	±1.06	30-41.25	33.85	±0.94	30-41.25
<i>N. sativa</i>	Turkey B3 Isparta: B. Mutlu 1780	TRZC & NONTR TRZC TRZC	37.1	±0.95	31.25-45	39.25	±0.85	35-45
	Turkey C2 Denizli: AAD 10915-E. Oybak Dönmez		36.7	±0.76	35-40	41.5	±0.90	37.5-47.5
	Turkey C4 Konya: H. Sümbül 2953		43.4	±1.64	37.5-52.5	45.53	±1.6	40-55
<i>N. turcica</i>	Turkey A9 İğdır: AAD 10833-B. Mutlu	TRZC & NONTR TRZC & NONTR	41.15	±1.01	37.5-45	45.1	±0.72	42.5-47.5
	Turkey B9 Ağrı: AAD 15499		38.28	±1.11	30-43.75	42.1	±1.10	36.25-47.5
<i>N. stellaris</i>	Turkey C4 İçel: M. Koyuncu 4191-G. Sezik-F. İzgü	TRZC TRZC	42.25	±0.88	40-50	44.35	±1.10	40-52.5
	Turkey C6 K.Maraş: B. Yıldız 2652		45.73	±1.09	42.5-51.25	46.95	±1.02	42.5-52.5
<i>N. fumariifolia</i>	Greece Rhodes: Runemark et al. 41441	TRZC TRZC	38.43	±1.04	32.5-45	36.05	±1.09	32.5-42.5
	Cyprus: Sintenis et Rigo 1880		41.7	±0.85	37.5-47.5	32.73	±0.7	27.5-35
Sect. <i>Nigellastrum</i>								
<i>N. orientalis</i>	Turkey B8 Bitlis: AAD 8047	TRZC & NONTR TRZC TRZC & NONTR	43.95	±0.64	40-47.5	45.8	±0.65	42.5-47.5
	Turkey C6 K. Maraş: B. Yıldız 1847		38.4	±0.68	35-42.5	42.25	±0.61	38.75-45
	Syria: AAD 15444		38.2	±0.93	35-45	41.7	±0.89	37.5-45
<i>N. oxypetala</i> var. <i>oxypetala</i>	Turkey A8 Erzurum: AAD 12341-I. A. Shehbaz-M. Menke	TRZC TRZC & NONTR TRZC & NONTR TRZC TRZC TRZC & NONTR TRZC & NONTR	40.58	±0.74	36.25-45	42.55	±0.74	38.75-48.75
	Turkey B8 Bingöl: AAD 14961		43.5	±0.68	40-46.25	45.87	±0.65	42.5-50
	Turkey C9 Şırnak: AAD 11242		45.8	±0.62	42.5-48.75	46.67	±0.61	45-50
	Turkey C9 Şırnak: AAD 15486		43.55	±1.18	37.5-51.25	45.85	±0.98	41.25-52.5
	Syria: AAD 15439		35.1	±0.83	32.5-41.25	37.73	±0.84	35-42.5
	Syria: AAD 15447		37.7	±0.43	35-40	40.8	±0.36	38.75-42.5
	Lebanon: AAD 17026		40.35	±1.46	32.5-50	41.13	±1.48	35-53.75
<i>Nigella oxypetala</i> var. <i>latisecta</i>	Turkey A5 Sivas: AAD 14857	TRZC & NONTR	43.47	±0.54	40-46.25	44.75	±0.45	42.5-47.5
<i>Nigella oxypetala</i> var. <i>lancifolia</i>	Turkey B4 Niğde: AAD 15960	TRZC & NONTR	38.28	±1.01	32.5-43.75	40.6	±0.98	35-46.25
<i>N. ciliaris</i>	Syria: AAD 15443	TRZC & NONTR TRZC & NONTR	38.35	±1.6	30-47.5	40	±2.02	27.5-50
	Syria: M. Haradjian 3511		43.33	±0.52	41.25-47.5	43.68	±0.55	41.25-46.25

Taxa	Specimen	Shape	Apocolpium Index	Clt (μm)
<i>Komaroffia</i>				
<i>K. integrifolia</i>	Iran: <i>K. H. Rechinger</i> 4704	P-SPH	0.25	5-7.6-14
	Iran: FUMH 28909	P-SPH	0.26	6-7.3-10
	Afghanistan: <i>A. Gilli</i> 827	SP	0.23	5-7.4-12
<i>K. bucharica</i>	Tajikistan: W 14384	P-SPH	0.26	7-9.4-10
<i>Garidella</i>				
<i>G. nigellastrum</i>	Turkey B4 Kırşehir: <i>B. Mutlu</i> 5061	SP	0.30	7.5-9.7-10
	Turkey C5 Mersin: AAD 15965	P-SPH	0.32	9-9.4-10
	Turkey C6 Antakya: AAD 15977	SP	0.24	7-8.3-10
	Turkey C8 Siirt: AAD 11174- <i>B. Mutlu</i>	SP	0.30	7.5-8.75-10
	Cyprus: AAD 15928	SP	0.26	6-7.3-8
	Cyprus: AAD 15934	SP	0.36	7-7.1-8
	Cyprus: AAD 15948	SP	0.30	6-7.1-9
	Syria: AAD 15453	SP	0.26	7-7.8-9
<i>G. unguicularis</i>	Turkey C6 K.Maraş: Z. Aytaç 4867- <i>H. Duman</i>	SP	0.27	7.5-8.75-10
	Turkey C8 Diyarbakır: <i>A. Güner</i> 6488	SP	0.29	7.5-9.25-10
	Syria: AAD 15437- <i>B.A. Sawman</i>	SP	0.29	7-8.3-10
	Syria: AAD 15440	P-SPH	0.29	7-7.9-10
	Syria: AAD 15454	SP	0.31	7-8.4-10
<i>Nigella</i>				
Sect. <i>Erobathos</i>				
<i>N. damascena</i>	Greece: <i>A. Tsopra</i>	P-SPH	0.24	7-9.3-12
	Turkey A1 Edirne: AAD 8718	OB-SPH	0.24	10-11.12-12.5
	Turkey A3 Düzce: <i>Aslı Doğru Koca</i> 1918	OB-SPH	0.41	10-12.4-14
<i>N. elata</i>	Turkey A3 Bolu: AAD 17617-Z. <i>Uğurlu</i>	OB-SPH	0.34	8-9.66-13
	Turkey B2 Balıkesir: AAD 14994	OB-SPH	0.33	10-11.37-12.5
	Turkey C3 Isparta: <i>H. Peşmen-A. Güner</i> 1805	OB-SPH	0.32	7.5-9.5-12.5
Sect. <i>Nigellaria</i>				
<i>N. gallica</i>	Portugal: <i>J. Paiva</i> , COI 8231	P-SPH	0.23	8-10.1-12
	Portugal: <i>K.H. Rechninger</i> 1373	OB-SPH	0.20	9-10.5-12
	Spain: <i>F. Krendl</i> 766	OB-SPH	0.24	8-10.55-13

Taxa	Specimen	Shape	Apocolpium Index	Clt (μm)
<i>N. papillosa</i> subsp. <i>atlantica</i>	Portugal: <i>A.Q. Fernandez et al.</i> 8688	P-SPH	0.26	8-9.33-10
	Tunisia: <i>D. Podlech</i> 53897	OB-SPH	0.31	11-11.44-12
<i>N. arvensis</i> var. <i>arvensis</i>	Greece: <i>R.v. Bothmer & A. Strid</i> 21809	OB-SPH	0.25	9-9.6-11
	Greece: <i>R.V. Bothmer sn</i>	P-SPH	0.31	6-8.9-12
	Greece: <i>K. H. Rechinger</i> (recorded as <i>Strid</i>) 24423	OB-SPH	0.29	10-10.44-11
	Greece: <i>AAD 15460-T. Karamplians</i>	OB-SPH	0.24	10-11.2-12
	Greece: <i>AAD 15462</i>	OB-SPH	0.21	10-10.3-11
	Greece: <i>AAD 15474</i>	OB-SPH	0.31	10-11.40-13
	Greece: <i>A. Strid</i> 4042	OB-SPH	0.31	9-10-11
	Turkey A1 Edirne: <i>AAD 14996-B. Mutlu</i>	P-SPH	0.31	9-11.3-13
	Turkey A1 Edirne: <i>AAD 15001-B. Mutlu</i>	OB-SPH	0.30	11-11.6-12
	Turkey A1 Kırklareli: <i>AAD 15005-B. Mutlu</i>	OB-SPH	0.32	8-10-12
<i>N. arvensis</i> var. <i>aristata</i>	Turkey B5 Yozgat: <i>P. H. Davis-T. Ekim</i> 68596	OB-SPH	0.33	10-11.75-12.5
	Turkey C3 Isparta: <i>AAD 14990</i>	OB-SPH	0.33	7.5-8.25-10
	Lebanon: <i>AAD 17014</i>	P-SPH	0.31	1-1.88-3
	Greece: <i>AAD 15459</i>	OB-SPH	0.32	6-9.5-11
	Greece: <i>AAD 15468-T. Karamplians</i>	OB-SPH	0.25	9-10.2-11
	Greece: <i>AAD 15469-T. Karamplians</i>	OB-SPH	0.30	11-12.5-14
	Turkey A1 Edirne: <i>AAD 7203</i>	OB-SPH	0.29	8-10.2-12
	Turkey A4 Ankara: <i>AAD 3536-H. Sağban-A. Kahraman</i>	OB-SPH	0.25	11-11.9-13
	Turkey B3 Afyon: <i>AAD 2920</i>	OB-SPH	0.30	10-12-12.5
	Turkey B4 Kırıkkale: <i>AAD 14847</i>	OB-SPH	0.27	9-10.5-11
	Turkey B5 Niğde: <i>AAD 15955-Z. Uğurlu</i>	OB-SPH	0.31	9-10.9-12
	Turkey B6 Sivas: <i>AAD 14977</i>	OB-SPH	0.23	12.5-13.5-15
	Turkey B7 Sivas: <i>AAD 12398-I. A. Shehbaz-M. Menke</i>	OB-SPH	0.28	12-12.7-14
	Turkey C5 Mersin: <i>AAD 16164-Z. Uğurlu</i>	OB-SPH	0.25	10-10.5-11
	Turkey C5 Hatay: <i>AAD 16975-G. Zare</i>	OB-SPH	0.35	10-11-12
<i>N. koyuncui</i>	Syria: <i>AAD 15445</i>	OB-SPH	0.27	10-11.1-12
	Syria: <i>AAD 15449</i>	OB-SPH	0.26	10-11-12
	Syria: <i>AAD 15451</i>	OB-SPH	0.30	8-8.6-10
	Syria: <i>AAD 15452</i>	OB-SPH	0.22	8-10-12
	Turkey A5 Sinop: <i>AAD 17223-Z. Uğurlu</i>	OB-SPH	0.27	7-10.8-14

Taxa	Specimen	Shape	Apocolpium Index	Clt (μm)
<i>N. segetalis</i>	Turkey A4 Çankırı: AAD 14403	OB-SPH	0.21	10-11.7-14
	Turkey A5 Sivas: AAD 14860	OB-SPH	0.28	7.5-10-12.5
	Turkey A8 Erzurum: AAD 12342-I. A. Shehbaz- M. Menke	OB-SPH	0.25	11.25-12.25-13.75
	Turkey A9 İğdır: AAD 11411-B. Mutlu	OB-SPH	0.27	10-12.12-13.75
	Turkey B5 Nevşehir: M. Vural et al.	OB-SPH	0.34	10-11.25-12.5
	Turkey B8 Muş: AAD 14952	OB-SPH	0.22	9-11-14
	Turkey B9 Ağrı: AAD 15502	OB-SPH	0.24	8-9.2-10
<i>N. sativa</i>	Turkey B3 Isparta: B. Mutlu 1780	OB-SPH	0.24	7-8-10
	Turkey C2 Denizli: AAD 10915-E. Oybak Dönmez	OB-SPH	0.27	10-12-12.5
	Turkey C4 Konya: H. Sümbül 2953	OB-SPH	0.25	10-11.5-13
<i>N. turcica</i>	Turkey A9 İğdır: AAD 10833-B.Mutlu	OB-SPH	0.24	10-10.75-12.5
	Turkey B9 Ağrı: AAD 15499	OB-SPH	0.26	11-12.6-15
<i>N. stellaris</i>	Turkey C4 İçel: M. Koyuncu 4191-G. Sezik-F. İzgü	OB-SPH	0.28	10-11-12.5
	Turkey C6 K.Maraş: B. Yıldız 2652	OB-SPH	0.30	9-10.6-12
<i>N. fumarifolia</i>	Greece Rhodes: Runemark et al. 41441	P-SPH	0.23	7-8.8-10
	Cyprus: Sintenis et Rigo	SP	0.29	2-2.3-3
Sect. <i>Nigellastrum</i>				
<i>N. orientalis</i>	Turkey B8 Bitlis: AAD 8047	OB-SPH	0.23	12.5-12.75-15
	Turkey C6 K. Maraş: B. Yıldız 1847	OB-SPH	0.22	9-10.7-12
	Syria: AAD 15444	OB-SPH	0.26	9-12.6-15
<i>N. oxypetala</i> var. <i>oxypetala</i>	Turkey A8 Erzurum: AAD 12341-I.A. Shehbaz & M. Menke	OB-SPH	0.27	11-12.4-13
	Turkey B8 Bingöl: AAD 14961	OB-SPH	0.26	10-13.12-16.25
	Turkey C9 Şırnak: AAD 11242	OB-SPH	0.25	12.5-14-15
	Turkey C9 Şırnak: AAD 15486	OB-SPH	0.31	10-11.5-13
	Syria: AAD 15439	OB-SPH	0.20	8-10.1-12
	Syria: AAD 15447	OB-SPH	0.19	10-12.9-15
	Lebanon: AAD 17026	OB-SPH	0.19	9-10-12
<i>N. oxypetala</i> var. <i>latisecta</i>	Turkey A5 Sivas: AAD 14857	OB-SPH	0.24	11.25-12.62-15
<i>N. oxypetala</i> var. <i>lancifolia</i>	Turkey B4 Niğde: AAD 15960	OB-SPH	0.29	11-12.5-16
<i>N. ciliaris</i>	Syria: AAD 15443	OB-SPH	0.30	8-12.1-15
	Syria: M. Haradjian 3511	OB-SPH	0.22	8-9.44-10

Taxa	Specimen	Exine thickness (µm)					
		Sexine			Nexine		
		Polar area	Mesocolpium	Margo	Polar area	Mesocolpium	Margo
Komaroffia							
<i>K. integrifolia</i>	Iran: <i>K. H. Rechinger</i> 4704	1.5	1.5	1.5	1	0.50	0.50
	Iran: FUMH 28909	1.5-1.95-2	1-1.45-2	0.9-0.98-1	0.9-0.99-1	0.9-0.92-1	0.9-0.92-1
	Afghanistan: <i>A. Gilli</i> 827	2.75	2	1.75	0.50	0.50	1
<i>K. bucharica</i>	Tajikistan: W 14384	1.75	1.50	1.50	0.75	0.50	0.50
Garidella							
<i>G. nigellastrum</i>	Turkey B4 Kırşehir: <i>B. Mutlu</i> 5061	1.5-1.74-2	1.5	0.8-0.91-1	0.90	0.9-0.93-1	0.9-0.93-1
	Turkey C5 Mersin: <i>AAD</i> 15965	2-2.05-2.5	1.9-2.18-2.5	1-1.10-1.5	0.9-0.95-1	0.7-0.75-0.8	0.7-0.75-0.8
	Turkey C6 Antakya: <i>AAD</i> 15977	1.5-1.95-2	2-2.2-2.5	1-1.05-1.5	0.9-0.92-1	0.9-0.97-1	0.9-0.98-1
	Turkey C8 Siirt: <i>AAD</i> 11174- <i>B. Mutlu</i>	1.5-1.61-2	1.5-1.55-2	0.9-0.99-1	0.9-0.99-1	0.9-0.98-1	0.9-0.98-1
	Cyprus: <i>AAD</i> 15928	1.8-1.98-2	1.8-1.95-2	1-1.10-1.5	0.9-0.96-1	0.5-0.75-1	0.5-0.76-1
	Cyprus: <i>AAD</i> 15934	1.8-1.96-2	1.7-1.79-1.8	0.7-0.97-1	0.9-0.95-1	0.9-0.97-1	0.9-0.99-1
	Cyprus: <i>AAD</i> 15948	1.5-1.85-2	1.5-1.9-2	0.9-1.09-1.5	0.9-0.94-1	0.9-0.97-1	0.9-0.98-1
	Syria: <i>AAD</i> 15453	1.5-1.95-2	1.7-1.87-2	0.8-0.96-1	0.9-0.96-1	0.7-0.89-1	0.7-0.89-1
<i>G. unguicularis</i>	Turkey C6 K.Maraş: <i>Z. Aytaç</i> 4867- <i>H. Duman</i>	1.5-1.6-2	1.5-1.7-2.5	0.9-0.96-1.5	0.9	0.9-0.97-1	0.9-0.96-1
	Turkey C8 Diyarbakır: <i>A. Güner</i> 6488	1.5-1.6-2	1.5-2.1-2.5	1-1.05-1.5	0.9	0.9-0.97-1	0.9-0.97-1
	Syria: <i>AAD</i> 15437- <i>B.A. Sawman</i>	1.5-2.05-2.5	2-2.3-2.5	1-1.2-1.5	0.9-0.95-1	0.9-0.98-1	1
	Syria: <i>AAD</i> 15440	2-2.05-2.5	2-2.1-2.5	0.9-0.99-1	0.9-0.94-1	0.9-0.97-1	0.9-0.97-1
	Syria: <i>AAD</i> 15454	2-2.1-2.5	2-2.05-2.5	0.9-0.99-1	0.9-0.93-1	0.9-0.98-1	0.9-0.99-1
Nigella							
Sect. Erobathos							
<i>N. damascena</i>	Greece: <i>A. Tsopra</i>	2	1.50	1.50	1	0.5	0.75
	Turkey A1 Edirne: <iaad< i=""> 8718</iaad<>	2.5-2.9-3	2.5-2.95-3	1.5-1.95-2	0.9-0.97-1	0.9-0.95-1	1-1.30-1.5
	Turkey A3 Düzce: <i>Aşlı Doğru Koca</i> 1918	2.5-2.7-3	2.5-2.65-3	1.5-1.8-2	1	0.7-0.91-1	0.8-1.33-1.5
<i>N. elata</i>	Turkey A3 Bolu: <i>AAD</i> 17617- <i>Z. Uğurlu</i>	2	1.75	1	0.5	0.5	0.5
	Turkey B2 Balıkesir: <i>AAD</i> 14994	2-2.7-3	2.5	1-1.15-1.5	0.9-0.98-1	0.8-0.97-1	1-1.35-1.5
	Turkey C3 Isparta: <i>H. Peşmen-A. Güner</i> 1805	2-2.4-2.5	2-2.45-2.5	1	0.8-0.9-1	0.8-0.95-1	1-1.15-1.5
Sect. Nigellaria							
<i>N. gallica</i>	Portugal: <i>J. Paiva</i> , COI 8231	3	2	1.75	0.75	0.50	0.50
	Portugal: <i>K. H. Rechninger</i> 1373	2.25	2	2	0.75	0.50	0.50
	Spain: <i>F. Krendl</i> 766	2.25	1.75	1.75	0.75	1	0.50

Taxa	Specimen	Exine thickness (μm)					
		Sexine			Nexine		
		Polar area	Mesocolpium	Margo	Polar area	Mesocolpium	Margo
<i>N. papillosa</i> subsp. <i>atlantica</i>	Portugal: A.Q. Fernandez et al. 8688	2.25	1.75	2	0.75	0.50	0.75
	Tunisia: D. Podlech 53897	2.25	1.75	2	0.75	0.50	0.75
<i>N. arvensis</i> var. <i>arvensis</i>	Greece: R.v. Bothmer & A. Strid 21809 (W)	2	2	1.75	0.75	0.75	1
	Greece: R.V. Bothmer sn	2.5	1.5	1	0.5	1	1
	Greece: K. H. Rechinger (recorded as Strid) 24423	2	1	1	1	1	1
	Greece: AAD 15460-T. Karamplians	3-3.05-3.5	2.5-2.8-3	1.5-1.65-2	0.9-0.98-1	0.9-0.97-1	1-1.05-1.5
	Greece: AAD 15462	3-3.1-3.5	2.5-2.8-3	1.5-1.6-2	0.9-0.99-1	0.7-0.84-1	0.9-1.03-1.5
	Greece: AAD 15474	3-3.2-3.5	2-2.63-3.5	1-1.7-2	0.8-0.9-1	0.5-0.73-1	0.5-0.73-1
	Greece: A. Strid 4042	2	1.50	1	0.50	0.50	0.50
	Turkey A1 Edirne: AAD 14996-B. Mutlu	2.5-2.9-3.5	2.5-2.6-3	1-1.35-1.5	0.9-0.98-1	0.9-0.97-1	1-1.2-1.5
	Turkey A1 Edirne: AAD 15001-B. Mutlu	3-3.05-3.5	2.5-2.85-3	1.5-1.65-2	0.9-0.93-1	0.8-0.98-1	1-1.3-1.5
	Turkey A1 Kirkclareli: AAD 15005- B. Mutlu	2.5-2.85-3	2.5-2.6-3	1-1.45-1.5	0.9-0.98-1	0.8-0.96-1	1
	Turkey B5 Yozgat: P.H. Davis-T. Ekim 68596	2.5	2.5	1	0.8-0.91-1	0.8-0.93-1	0.9-0.97-1
<i>N. arvensis</i> var. <i>aristata</i>	Turkey C3 Isparta: AAD 14990	2.5-2.6-3	2.5-2.7-3	1-1.15-1.5	0.9-0.96-1	0.8-0.98-1	1-1.45-1.5
	Lebanon: AAD 17014	3	1.5	2	1	1	1
<i>N. arvensis</i> var. <i>aristata</i>	Greece: AAD 15459	2.5-3-3.5	2.5-2.7-3	1.5-1.65-2	0.9-0.98-1	0.7-0.77-0.9	0.9-0.95-1
	Greece: AAD 15468-T. Karamplians	3	2.5-3-3.5	1.5-1.8-2	0.9-0.99-1	0.9-0.96-1	0.9-1.04-1.5
	Greece: AAD 15469-T. Karamplians	3-3.45-3.5	2.5-2.95-3	1.5-1.65-2	0.9-0.97-1	0.9-0.98-1	1-1.20-1.5
	Turkey A1 Edirne: AAD 7203	2.5-3.05-3.5	2.5-3-3.5	1.5-1.85-2	0.9-0.97-1	0.9-0.97-1	1-1.35-1.5
	Turkey A4 Ankara: AAD 3536-H. Sağban-A. Kahraman	2.5-2.7-3	2.5-2.55-3	1.5-1.75-2	0.8-0.88-1	0.8-0.95-1	1
	Turkey B3 Afyon: AAD 2920	2.5-2.85-3	2.5-2.65-3	1-1.20-2	0.8-0.92-1	0.8-0.88-1	1-1.05-1.5
	Turkey B4 Kırıkkale: AAD 14847	2.5-2.8-3	2.5-2.8-3	1.5-1.55-2	0.9-0.99-1	0.7-0.94-1	1-1.30-1.5
	Turkey B5 Niğde: AAD 15955-Z. Uğurlu	2.5-2.85-3	2.5	1.5-1.7-2	0.9-0.99-1	0.8-0.95-1	1-1.15-1.5
	Turkey B6 Sivas: AAD 14977	2.5-2.9-3.5	2-2.5-3	1-1.05-1.5	0.9-0.98-1	0.9-0.99-1	1.5
	Turkey B7 Sivas: AAD 12398-I.A. Shehbaz-M. Menke	3-3.35-3.5	2.5-2.75-3	1.5-1.6-2	0.9-0.97-1	0.9-0.95-1	1-1.10-1.5
	Turkey C5 Mersin: AAD 16164-Z. Uğurlu	2.5-2.7-3	2.5-2.8-3	1-1.5-2	0.9-0.97-1	0.9-0.98-1	1-1.13-1.5
	Turkey C5 Hatay: AAD 16975-G. Zare	2.5-3-3.5	2-2.75-3.5	1-1.5-2	0.8-0.9-1	0.7-0.85-1	1-1.25-1.5
	Syria: AAD 15445	2.5-3.35-4	2.5-2.95-3	1.5-1.65-2	0.9-0.98-1	0.7-0.94-1	1-1.15-1.5
	Syria: AAD 15449	3	2-2.35-3	1-1.45-2	0.9-0.99-1	0.5-0.96-1.5	0.5-1.03-1.5
	Syria: AAD 15451	3-3.1-3.5	2.5-2.6-3	1-1.5-2	0.9-0.97-1	0.8-0.92-1	1
	Syria: AAD 15452	2.5-3-3.5	2-2.7-3	1-1.4-1.5	0.9-0.95-1	0.8-0.91-1	1-1.15-1.5
<i>N. koyuncui</i>	Turkey A5 Sinop: AAD 17223-Z. Uğurlu	2	1.50	1	1	0.50	1

Taxa	Specimen	Exine thickness (μm)					
		Sexine			Nexine		
		Polar area	Mesocolpium	Margo	Polar area	Mesocolpium	Margo
<i>N. segetalis</i>	Turkey A4 Çankırı: AAD 14403	2.5-2.9-3	2-2.5-3	1-1.5-2	0.9-0.99-1	0.7-0.92-1	1-1.25-1.5
	Turkey A5 Sivas: AAD 14860	2-2.5-3	2-2.1-2.5	1-1.10-1.5	0.9-0.97-1	0.9-0.99-1	1-1.15-1.5
	Turkey A8 Erzurum: AAD 12342-I.A. Shehbaz- M. Menke	2-2.6-3	2.5-2.65-3	1-1.35-1.5	0.7-0.85-1	0.9-0.96-1	1
	Turkey A9 İğdir: AAD 11411-B. Mutlu	2-2.5-3	2-2.4-2.5	1-1.10-1.5	0.8-0.88-1	0.8-0.93-1	0.8-1.03-1.5
	Turkey B5 Nevşehir: M. Vural et al. (HUB)	2-2.55-3	2-2.25-2.5	1-1.20-1.5	0.9-0.92-1	0.9-0.96-1	1-1.05-1.5
	Turkey B8 Muş: AAD 14952	2.5-2.85-3	2.5-2.8-3	1.5-1.75-2	0.9-0.99-1	0.7-0.93-1	1-1.2-1.5
	Turkey B9 Ağrı: AAD 15502	2.5-2.95-3	2.5-2.8-3	1.5-1.7-2	0.9-0.96-1	0.8-0.94-1	1-1.25-1.5
<i>N. sativa</i>	Turkey B3 Isparta: B. Mutlu 1780 (HUB)	3	2.5-2.85-3	1-1.10-1.5	0.8-0.93-1	0.8-0.93-1	0.8-0.91-1
	Turkey C2 Denizli: AAD 10915-E. Oybak Dönmez	2.5-2.75-3.5	2.5	1-1.10-1.5	0.9-0.92-1	0.9-0.97-1	1-1.10-1.5
	Turkey C4 Konya: H. Sümbül 2953	3	2.75	1	1	0.50	1
<i>N. turcica</i>	Turkey A9 İğdir: AAD 10833-B. Mutlu	3-3.35-4	3.5-4.2-5	1-1.20-1.5	0.9-0.94-1	0.9-0.98-1	1-1.10-1.5
	Turkey B9 Ağrı: AAD 15499	2.5-2.9-3.5	2.5-2.8-3	1.5-1.6-2	0.9-0.95-1	0.9-0.96-1	1-1.4-2
<i>N. stellaris</i>	Turkey C4 İçel: M. Koyuncu 4191-G. Sezik-F. İzgü	2.5-2.85-3	2-2.35-2.5	1-1.10-1.5	0.9-0.94-1	0.9-0.97-1	1-1.3-1.5
	Turkey C6 K.Maraş: B. Yıldız 2652 (HUB)	3	2	2	0.75	0.75	0.50
<i>N. fumarifolia</i>	Greece Rhodes: Runemark et al. 41441	2.25	2	2	0.75	0.50	0.50
	Cyprus: Sintenis et Rigo 1880	2	1.75	2	1	0.75	0.50
Sect. <i>Nigellastrum</i>							
<i>N. orientalis</i>	Turkey B8 Bitlis: AAD 8047	2.5-2.65-3	3-3.6-4	1.5-1.7-2	1	1-1.05-1.5	1-1.15-1.5
	Turkey C6 K. Maraş: B. Yıldız 1847	2.50	1.75	1.5	0.5	0.75	0.5
	Syria: AAD 15444	2.5-2.85-3	2-2.6-3	1.5-1.9-2	0.9-0.94-1	0.5-0.68-0.8	0.7-0.96-1.5
<i>N. oxypetala</i> var. <i>oxypetala</i>	Turkey A8 Erzurum: AAD 12341-I. A. Shehbaz-M. Menke	3-3.05-3.5	3-3.30-3.5	1-1.55-2	0.9-0.98-1	0.8-1.12-1.5	1-1.3-1.5
	Turkey B8 Bingöl: AAD 14961	3-3.45-4	3.5-4.40-5	1-1.55-2	0.9-0.96-1	0.9-1.19-1.5	1-1.6-2
	Turkey C9 Şırnak: AAD 11242	3.5-3.95-4	3.5-4.2-5	1.5-1.85-2	1	0.9-0.98-1	1-1.25-1.5
	Turkey C9 Şırnak: AAD 15486	3.5-3.7-4	4-4.45-5	1-2.15-3	0.9-0.98-1	0.8-0.94-1	1-1.38-1.5
	Syria: AAD 15439	2.5-2.65-3	3-3.75-4.5	1-1.4-2	1	0.8-1.01-1.5	1-1.15-1.5
	Syria: AAD 15447	2.5-3-4	2.5-3.2-4	1-1.15-1.5	1-1.05-1.5	1-1.35-1.5	1-1.5-2
	Lebanon: AAD 17026	2.5	3	1.5	0.75	1	1
<i>N. oxypetala</i> var. <i>latisecta</i>	Turkey A5 Sivas: AAD 14857	3-3.30-4	3-3.35-4	1-1.5-2	1	1	1-1.35-1.5
<i>N. oxypetala</i> var. <i>lancifolia</i>	Turkey B4 Niğde: AAD 15960	2.5-2.95-4	2.5-3.05-4	1.5-1.85-2	0.9-0.99-1	0.9-0.99-1	1
<i>N. ciliaris</i>	Syria: AAD 15443	2.5-3.05-3.5	2.5-2.85-3.5	1-1.75-2	0.9-0.99-1	0.9-0.99-1	1-1.25-1.5
	Syria: M. Haradjian 3511	2.5	1.75	1.75	0.50	0.75	0.50

Taxa	Specimen	Exine Pattern				Intine thickness (μm)
		Mesocolpium and Polar area		Colpus membrane		
		LM	SEM	LM	SEM	
<i>Komaroffia</i>						
<i>K. integrifolia</i>	Iran: K. H. Rechinger 4704	MECH	MECH-PU	MECH	MECH	<1
	Iran: FUMH 28909	MECH	MECH-PU	MECH	MECH	<1
	Afghanistan: A. Gilli 827	MECH	MECH-PU	MECH	MECH	<1
<i>K. bucharica</i>	Tajikistan: W 14384	MECH	MECH-PU	MECH	MECH	<1
<i>Garidella</i>						
<i>G. nigellastrum</i>	Turkey B4 Kirşehir: <i>B. Mutlu</i> 5061	MECH	MECH-PU	MECH	ECH	≤1
	Turkey C5 Mersin: <i>AAD</i> 15965	MECH	MECH-PU	MECH	ECH	<1
	Turkey C6 Antakya: <i>AAD</i> 15977	MECH	MECH-PU	MECH	ECH	<1
	Turkey C8 Siirt: <i>AAD</i> 11174- <i>B. Mutlu</i>	MECH	MECH-PU	MECH	ECH	≤1
	Cyprus: <i>AAD</i> 15928	MECH	MECH-PU	MECH	ECH	<1
	Cyprus: <i>AAD</i> 15934	MECH	MECH-PU	MECH	ECH	<1
	Cyprus: <i>AAD</i> 15948	MECH	MECH-PU	MECH	ECH	<1
	Syria: <i>AAD</i> 15453	MECH	MECH-PU	MECH	ECH	<1
<i>G. unguicularis</i>	Turkey C6 K.Maraş: <i>Z. Aytaç</i> 4867- <i>H. Duman</i>	MECH	MECH-PU	MECH	ECH	<1
	Turkey C8 Diyarbakır: <i>A. Güner</i> 6488	MECH	MECH-PU	MECH	ECH	<1
	Syria: <i>AAD</i> 15437- <i>B.A. Sawman</i>	MECH	MECH-PU	MECH	ECH	<1
	Syria: <i>AAD</i> 15440	MECH	MECH-PU	MECH	ECH	<1
	Syria: <i>AAD</i> 15454	MECH	MECH-PU	MECH	ECH	<1
<i>Nigella</i>						
Sect. <i>Erobathos</i>						
<i>N. damascena</i>	Greece: <i>A. Tsopra</i>	MECH	MECH-PU	MECH	MECH	<1
	Turkey A1 Edirne: <i>AAD</i> 8718	MECH	MECH-PU	MECH	MECH	≤1
	Turkey A3 Düzce: <i>Aslı Doğru Koca</i> 1918	MECH	MECH-PU	MECH	MECH	≤1
<i>N. elata</i>	Turkey A3 Bolu: <i>AAD</i> 17617- <i>Z. Uğurlu</i>	MECH	MECH-PU	MECH	MECH	<1
	Turkey B2 Balıkesir: <i>AAD</i> 14994	MECH	MECH-PU	MECH	MECH	<1
	Turkey C3 Isparta: <i>H. Peşmen-A. Güner</i> 1805	MECH	MECH-PU	MECH	MECH	<1
Sect. <i>Nigellaria</i>						
<i>N. gallica</i>	Portugal: <i>J. Paiva</i> , COI 8231	MECH	MECH-PU	MECH	MECH	<1
	Portugal: K. H. Rechninger 1373	MECH	MECH-PU	MECH	MECH	<1
	Spain: <i>F. Krendl</i> 766	MECH	MECH-PU	MECH	MECH	<1

Taxa	Specimen	Exine Pattern				Intine thickness (μm)	
		Mesocolpium and Polar area		Colpus membrane			
		LM	SEM	LM	SEM		
<i>N. papillosa</i> subsp. <i>atlantica</i>	Portugal: A.Q. Fernandez et al. 8688	MECH	MECH-PU	MECH	MECH	≤1	
	Tunisia: D. Podlech 53897	MECH	MECH-PU	MECH	MECH	≤1	
<i>N. arvensis</i> var. <i>arvensis</i>	Greece: R.v. Bothmer & A. Strid 21809	MECH	MECH-PU	MECH	MECH	<1	
	Greece: R.V. Bothmer sn	MECH	MECH-PU	MECH	MECH	<1	
	Greece: K. H. Rechinger (recorded as Strid) 24423	MECH	MECH-PU	MECH	MECH	<1	
	Greece: AAD 15460-T. Karamplians	MECH	MECH-PU	MECH	MECH	<1	
	Greece: AAD 15462	MECH	MECH-PU	MECH	MECH	<1	
	Greece: AAD 15474	MECH	MECH-PU	MECH	MECH	≤1	
	Greece: A. Strid 4042	MECH	MECH-PU	MECH	MECH	<1	
	Turkey A1 Edirne: AAD 14996-B. Mutlu	MECH	MECH-PU	MECH	MECH	<1	
	Turkey A1 Edirne: AAD 15001-B. Mutlu	MECH	MECH-PU	MECH	MECH	<1	
	Turkey A1 Kırklareli: AAD 15005- B. Mutlu	MECH	MECH-PU	MECH	MECH	<1	
	Turkey B5 Yozgat: P.H. Davis-T. Ekim 68596	MECH	MECH-PU	MECH	MECH	<1	
	Turkey C3 Isparta: AAD 14990	MECH	MECH-PU	MECH	MECH	<1	
	Lebanon: AAD 17014	MECH	MECH-PU	MECH	MECH	<1	
<i>N. arvensis</i> var. <i>aristata</i>	Greece: AAD 15459	MECH	MECH-PU	MECH	MECH	<1	
	Greece: AAD 15468-T. Karamplians	MECH	MECH-PU	MECH	MECH	<1	
	Greece: AAD 15469-T. Karamplians	MECH	MECH-PU	MECH	MECH	<1	
	Turkey A1 Edirne: AAD 7203	MECH	MECH-PU	MECH	MECH	<1	
	Turkey A4 Ankara: AAD 3536-H. Sağban-A. Kahraman	MECH	MECH-PU	MECH	MECH	<1	
	Turkey B3 Afyon: AAD 2920	MECH	MECH-PU	MECH	MECH	<1	
	Turkey B4 Kirikkale: AAD 14847	MECH	MECH-PU	MECH	MECH	<1	
	Turkey B5 Niğde: AAD 15955-Z. Uğurlu	MECH	MECH-PU	MECH	MECH	<1	
	Turkey B6 Sivas: AAD 14977	MECH	MECH-PU	MECH	MECH	<1	
	Turkey B7 Sivas: AAD 12398-I.A. Shehbaz-M. Menke	MECH	MECH-PU	MECH	MECH	<1	
	Turkey C5 Mersin: AAD 16164-Z. Uğurlu	MECH	MECH-PU	MECH	MECH	<1	
	Turkey C5 Hatay: AAD 16975-G. Zare	MECH	MECH-PU	MECH	MECH	<1	
	Syria: AAD 15445	MECH	MECH-PU	MECH	MECH	<1	
	Syria: AAD 15449	MECH	MECH-PU	MECH	MECH	≤1	
<i>N. koyuncui</i>	Syria: AAD 15451	MECH	MECH-PU	MECH	MECH	<1	
	Syria: AAD 15452	MECH	MECH-PU	MECH	MECH	<1	
<i>N. koyuncui</i>	Turkey A5 Sinop: AAD 17223-Z. Uğurlu	MECH	MECH-PU	MECH	MECH	<1	

Taxa	Specimen	Exine Pattern				Intine thickness (μm)
		Mesocolpium and Polar area		Colpus membrane		
		LM	SEM	LM	SEM	
<i>N. segetalis</i>	Turkey A4 Çankırı: AAD 14403	MECH	MECH-PU	MECH	MECH	<1
	Turkey A5 Sivas: AAD 14860	MECH	MECH-PU	MECH	MECH	≤1
	Turkey A8 Erzurum: AAD 12342-I.A. Shehbaz- M. Menke	MECH	MECH-PU	MECH	MECH	<1
	Turkey A9 İğdır: AAD 11411-B. Mutlu	MECH	MECH-PU	MECH	MECH	<1
	Turkey B5 Nevşehir: M. Vural et al.	MECH	MECH-PU	MECH	MECH	<1
	Turkey B8 Muş: AAD 14952	MECH	MECH-PU	MECH	MECH	≤1
	Turkey B9 Ağrı: AAD 15502	MECH	MECH-PU	MECH	MECH	≤1
<i>N. sativa</i>	Turkey B3 Isparta: B. Mutlu 1780	MECH	MECH-PU	MECH	MECH	<1
	Turkey C2 Denizli: AAD 10915-E. Oybak Dönmez	MECH	MECH-PU	MECH	MECH	<1
	Turkey C4 Konya: H. Sümbül 2953	MECH	MECH-PU	MECH	MECH	<1
<i>N. turcica</i>	Turkey A9 İğdır: AAD 10833-B. Mutlu	MECH	MECH-PU	MECH	MECH	<1
	Turkey B9 Ağrı: AAD 15499	MECH	MECH-PU	MECH	MECH	<1
<i>N. stellaris</i>	Turkey C4 İçel: M. Koyuncu 4191-G. Sezik-F. İzgü	MECH	MECH-PU	MECH	MECH	<1
	Turkey C6 K.Maraş: B. Yıldız 2652	MECH	MECH-PU	MECH	MECH	≤1
<i>N. fumarifolia</i>	Greece Rhodes: Runemark et al. 41441	MECH	MECH-PU	MECH	MECH	<1
	Cyprus: Sintenis et Rigo 1880	MECH	MECH-PU	MECH	MECH	<1
Sect. Nigellastrum						
<i>N. orientalis</i>	Turkey B8 Bitlis: AAD 8047	MECH	MECH-PU	MECH	MECH	<1
	Turkey C6 K. Maraş: B. Yıldız 1847	MECH	MECH-PU	MECH	MECH	<1
	Syria: AAD 15444	MECH	MECH-PU	MECH	MECH	<1
<i>N. oxypetala</i> var. <i>oxypetala</i>	Turkey A8 Erzurum: AAD 12341-I. A. Shehbaz-M. Menke	MECH	MECH-PU	MECH	MECH	≤1
	Turkey B8 Bingöl: AAD 14961	MECH	MECH-PU	MECH	MECH	≤1
	Turkey C9 Şırnak: AAD 11242	MECH	MECH-PU	MECH	MECH	<1
	Turkey C9 Şırnak: AAD 15486	MECH	MECH-PU	MECH	MECH	≤1
	Syria: AAD 15439	MECH	MECH-PU	MECH	MECH	≤1
	Syria: AAD 15447	MECH	MECH-PU	MECH	MECH	<1
	Lebanon: AAD 17026	MECH	MECH-PU	MECH	MECH	≤1
<i>N. oxypetala</i> var. <i>latisecta</i>	Turkey A5 Sivas: AAD 14857	MECH	MECH-PU	MECH	MECH	<1
	Turkey B4 Niğde: AAD 15960	MECH	MECH-PU	MECH	MECH	<1
<i>N. ciliaris</i>	Syria: AAD 15443	MECH	MECH-PU	MECH	MECH	<1
	Syria: M. Haradjian 3511	MECH	MECH-PU	MECH	MECH	<1

S3

