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CHECKLIST OF IRAQI UREDINALES

by

R. S. MATHUR



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CHECKLIST OF IRAQI UREDINALES

by

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CHECKLIST OF IRAQI UREDINALES

Iraq is an agricultural and pastoral country constituting an area of 171,599 square miles and primarily included in the Mediterranean region (4). In all of its agro-climatic areas, the rust fungi (Uredinales) predominate as obligate parasites attacking the aerial parts of wild and cultivated plants. At least for the past one hundred years, the Iraqi, British, European, American and Indian plant pathologists have been publishing records of these fungi. This literature is now so scattered and the problems of nomenclature of the Uredinales have so much increased by the revision of the Rules at Stockholm in 1950 and the latest International Code of Botanical Nomenclature that researchers in this field find it difficult to file correct information on the fluctuating names applied to the rust species. In presenting this checklist of the Iraqi Uredinales, I have tried to check each name back to its original source and have changed some names and author citations after consulting some well known Uredinologists. But I thought it better not to propose any new combinations. Instead of listing all the synonyms, only such old names of the Iraqi rust species are given which have undergone nomenclatural change. References to earlier recordings are numbered and the respective numbers of papers are given within parenthesis after the name of the host, locality, or the date of collection. The names of hosts and localities are taken from the 'Flora of Iraq' by Evan Guest, 1966 (Baghdad) and where necessary host names are altered according to the current usage in the National Herbarium of Iraq (BAG). Since the collectors' names can be found from the references to published literature, they have been deleted from the text. The entries are numbered under each family in alphabetic requence for precision of reference in the Host index.

MELAMPSORACEAE

1. *Melampsora allii-fragilis* Kleb. in *Jahrb. Wiss. Bot.* 35, 674 (1901).
On leaves of *Salix babylonica* L., Shaqlawa, c. 900m, May 25, 1942; Karbala city, May 15, 1949; Abu-Ghraib, Aug. 1966; Hindiya, banks of Tigris river, Oct. 1967. On *Salix* sp. Abu-Ghraib (10).
2. *Melampsora allii-populina* Kleb, in *Z Pfl. Krankh.* 12, 25 (1902).
On leaves of *Populus nigra* L., Baghdad, Oct. 8, 1967 (10).
3. *Melampsora epitea* (Kunze & Schum.) Thuem. in *Mitth. Forstl. Versuchsw.* 2(1), 38 & 40 (1879).
On leaves of *Salix* sp. Hindiya, Nov. 7, 1967 (1).
4. *Melampsora euphorbiae* (Schub.) Cast. in *Obs. Pl. Acotyl.* 2, 18 (1843).
Syn. *Melampsora helioscopiae* Wint., *Rabenh. Krypt. Fl.* Ed. 2, 1(1), 240 (1882) (11).
On leaves of *Euphorbia helioscopia* L., (7); Haditha, c. 120m, Mar. 25, 1947. On *E. macroclada* Boiss., Erbil, Kirkuk, Mosul and Sulaimaniya, May-Aug. On *E. orientalis* L., (14). On *E. peplus* L., (7).
5. *Melampsora euphorbiae-gerardianae* W. Muell. in *Centralbl. f. Bakt.*, 2, Abt. 71, 210, 219, 452 & 548 (1907).
On leaves of *Euphorbia dense* Sorenck, Sarchinar, c. 750m, May 14, 1967; Bakrajo, c. 750m, Aug. 26, 1967. On *E. macroclada* Boiss. var. *schizocerata* Boiss. (14). On *E. peplus* L., Hit, Mar. 24, 1967. On *Euphorbia* sp. (14); 5km north of Karbala, Mar. 31, 1960 (18).
6. *Melampsora lini* (Ehrenb). Lév. in *Ann. Sci. Nat.* Ser. 3, 8, 376 (1847).
On leaves of *Linum nodiflora* L., Sarchinar, c. 750m, May 17, 1967 (9, 10). On *L. usitatissimum* L., Sulaimaniya, May-July, 1948 (11).

Mathur: Checklist of Iraqi Uredinales

7. *Melampsora microspora* Tranz. & Eremeeva in Tranzschel, *Conspetus Ured.*, URSS, 155 (1939).

On leaves of *Populus nigra* L., Bakrajo, c. 750m., Oct. 1950 (10).

8. *Melampsora* sp. Urban in *Uredineana*, 6:7 (1966).

On leaves of *Euphorbia tinctoria* Boiss. & Huet. (16).

Note: *Uredo erphorbiae* D.C. belongs to *Melampsora* (7).

PUCCINIACEAE

9. *Aecidium astragali* Eriks. in *Fungi paras Scand.* No. 285.

On *Astragalus rugosus* Fisch. (15).

10. *Aecidium muscari* Linhart in *Hedwigia*, 22:22 (1883).

On *Asphodelus tenuifolius* Cav., *Bellevalia macrobotrys* Boiss., 15 km east Baquba, Mar. 4, 1960. On *B. glauca* (Lindl.) Kunth, Diltawa, Mar. 16, 1960, 0+1. On *B. kurdistanica* Feinbr., Dohuk-galli, Mar. 22, 1961 (18).

11. *Aecidium scabiosae* (Dozy & Molk.) Wint. in Gaumann, *Rostpilze*, 704 (1959),

On leaves of *Cephalaria syriaca* (L.) Serad, Bakrajo, c. 750m, May 16, 1967, I (9, 10).

12. *Aecidium tami* Urban in *Uredineana*, 6:10 (1966).

On *Tamus communis* L., between Rowanduz and Mazna, June 18, 1961, 0+1 (19).

13. *Aecidium* sp.

On leaves and stems of *Fumaria bracteosa* Pomel., Bakrajo, c. 750m, June 10, 1966, 0+1 (9, 10).

14. *Gymnosporangium clavariiforme* (Pers.) DC. in *Fl. Fr.* 2:217 (1805).

On *Crataegus monogyna* Jacq., common. On *Crataegus* sp., Erbil, Mosul, Sulaimaniya. On *Pyrus communis* L., common, July-Aug. (1,2,6,11).

15. *Phragmidium bulbosum* (Str.) Schlecht. in *Fl. Berol.*, 2:156 (1824).

On *Rubus sanctus* Schreb. Sarchinar, c. 750m, May 27, 1960, II (18).

16. *Phragmidium mucronatum* (Pers.) Schlecht. in *Fl. Berol.*, 2:156 (1824).

Syn. *Phragmidium disciflorum* (Tode) James in *Contr. U.S. Nat. Herb.* 3:276 (1895); *Phragmidium subcorticium* Wint. in *Rabenh. Krypt. Fl. Ed. 2*, 1(1): 828 (1882).

On *Rosa canina* L. Kuh-Sefin (7); on *Rosa* sp. Rowanduz, Sheikhan, June 5, 1961; near Mergazor, c. 1070m, June 18, 1961 (18). Baquba (Diyala), Mosul, Aug.-Oct. (1,9,11).

17. *Phragmidium sanguisorbe* (DC.) Schroet. in Cohn, *Krypt. Fl. Schles.* 3(1): 352 (1887).

On *Poterium villosum* S.S., on the mountains of Kuh-Sevin at Erbil Sefin Dag at Shaqlawa c. 1000m (7).

18. *Phragmidium sanguisorbe* (DC.) Schroet. var. *longipes* Sacc. & Trott. in *Ann. mycol., Berl.* 11:413, 1913. (Also see *P. poterii* in Gaumann, *Rostpilze*, 1183 (1959).

On *Poterium lasiocarpum* Boiss. & Hassk., Erbil, Sulaimaniya,

Mathur: Checklist of Iraqi Uredinales

July-Sept. (9); on *Poterium* sp., Nowada, c. 1360m June 6, 1960, III (18).

19. *Phragmidium violaceum* (C.F. Schultz) Wint. in *Hedwigia*, 19:54 (1880).

On *Rubus sanctus* Schreb. Erbil, Mosul, Sulaimaniya, July-Sept. 1948, II, III (1,6,11).

20. *Pileolaria terebinthi* Cast. in *Observ. Ured.* I, 22.

On leaves of *Pistacia nutica* F. & May, 'am Berge Boriter' in Kurdistan (7, 16); Zawita, c. 914-1066 m, Mosul, July 27, 1933. On *P. vera* L., Mosul, July, 1966, III (10).

21. *Puccinia acarnae* Syd. in *Mon. Ured.* 1:130 (1904).

On leaves and stem of *Cirsium acerna* (L.) Moench., near Mindan Bridge, Mosul, June 10, 1958, II+III (9,10).

22. *Puccinia acetosae* Koern. in *Hedwigia*, 15:184 (1876).

On leaves and stem (aerial parts) of *Rumex angustifolius* Campd., Penjwin c. 1350m, Sulaimaniya, June 21, 1957, I+II+III (9,10). On *Rumex tuberosus* L. (7).

23. *Puccinia achilleae* Cke. in *Grevillaea*, 9:13 (1880).

On leaves and stems of *Achillea vermicularis* Trin., Sevara Gauric valley, NE of Zakho, c. 1500m, Mosul, July 9, 1957 (9); Sakri Sakran, June 6, 1961, II+III (19). On *Achillea* sp., Sarsang slopes of Garadagh, c. 1050m, Mosul, June 12, 1958 (9).

24. *Puccinia acroptili* Syd. in *Mon. Ured.* 1:4 (1904).

On *Acroptilon picris* (Pall.) DC., Kurdistan, II+III (17).

25. *Puccinia aeluropodis* Ricker in *J. Mycol.* 11:114 (1905).

On leaves *Aeluropus lagopoides* (L.) Druce, north of Badra, June

- 3, 1957; Imam Ibrahim, Apr. 26, 1960, II+III (18,19); Kut, Apr., 1967 III (9).
26. *Puccinia allii* Rud. in *Linnaea*, 4:392 (1829).
Syn. *Puccinia porri* (Sow.) Wint. in Engl., Pilze, pl. 411 (1810).
On *Allium cepa* L. (1,6,11); on *A. porrum* L., Sulaimaniya, May 15, 1967 (9,11). On *A. sativum* L., Zafraniah, Baghdad, Feb. 13, 1967 (9).
27. *Puccinia antirrhini* Diet. & Holw. in *Hedwigia*, 36:298 (1897).
On *Antirrhinum majus* L., Erbil, Kirkuk, July, 1948, II+III (1,11).
28. *Puccinia aristidae* Tracy var. *chaetariae* Cumm. & Husain *Bull. Torrey bot. Cl.*, 93:63 (1966).
On leaves of *Aristida* sp., Tasluja c. 850m, June 21, 1957, II, III (10).
29. *Puccinia aristolochiae* (DC.) Wint. in Raben. *Krypt. Fl. Deutschl.*, 1:201 (1884).
Syn. *Uredo aristolochiae* DC., in *Fl. France*, 6:67 (1815).
On *Aristolochia bottae* Jaub. & Spach., Erbil (7). On *Aristolochia* sp., Rowanduz, in the valley of Hassar-i-Sakran, June 7, 1961 I+III (19).
30. *Puccinia balsamitae* (Str.) Rab. in DC. *Fl. No.* 228.
On leaves of *Chrysanthemum balsamita* L., Al-Khurd Dagh, c. 2000m, Aug. 4, 1947, II+III (10).
31. *Puccinia bithynica* Magn., in Sydow, *Mon. Ured.*, 1:295 (1904).
On leaves of *Salvia autobulasa* L., Pushtashan village in Qandil range, 25km NNE of Rania, July 10, 1960 (10).
32. *Puccinia bulbocastani* Fekl. in *Jahr. Nass. Ver. Nat.* 23-24:52 (1869).

Mathur: Checklist of Iraqi Uredinales

On *Andropogon* sp., Kurdistan at Kirkuk, east of city, June 13, 1957, II+III. On *Cymbopogon schoenanthus* (L.) Spreng., in the steppe at Koma Sank Mandali, May 10, 1961 (19).

42. *Puccinia crepidicola* Syd. in *Oest. Bot. Zeit.* 51:17 (1901).

Syn. *Puccinia crepidis* Schroet. in *Krypt. Fl. Schles, Pilze*, 319 (10).

On leaves and stem of *Crepis aspera* L., Wadi Al-Khir, 15 km N of Lussuf, c. 100 km NNW of Shabicha, Apr. 26, 1957. On *Crepis* sp., 23 km W of Shaikh Saad, c. 25m, Apr. 4, 1958; 10 km W of Tawela on road between Halibja and Tawela, June 15, 1957 (10).

43. *Puccinia cynodontis* Desm. in *Ersicatti* III, N.F. No. 655.

On *Cynodon dactylon* (L.) Pers., Sept., common (1,2,6,11). On *Plantago lanceolata* L., Bakrajo, c. 750m, May 15, 1967 (9,10).

44. *Puccinia difformis* Kunze apud Kunze & Schm. in *Mycol. Heft.* 1:71 (1817).

On leaves and stem of *Galium coronatum* S. & S., Sarsang slopes of Garadagh, c. 1150-1250m, June 12, 1958; Kurek Mt. c. 1550-1650m, between Saran village and Kilkil, June 9, 1959; Molla Khort Mt. c. 1700m, June 22, 1960. On *Galium* sp., Hauraman Mt. c. 1990m, June 24, 1960 (10).

45. *Puccinia discoidearum* Lk. in *Spec. Pl.* II, 75.

On *Tanacetum* sp., III, 'am Boriter, Kurdistan. On *Gundelia tournefortii* L. (16).

Note: Saccardo treats this as a synonym of *P. tanaceti* DC., and *P. balsamitae* Dc. (*Syll. fung.* 6:637,647, 1888).

46. *Puccinia eryngii* DC. in Lamark *Encycl. method.* 8:249 (1808).

On leaves and stem of *Ammi majus* L., Dookan Dam (10). On *Eryngium barrelieri* Boiss., Diltawa, Mar. 16, 1960, 0+I+II+III (19).

47. *Puccinia gladioli* (Duby) Cast. in *Obs. Pl. Acotyl.* 2:17 (1843).

On leaves of *Gladiolus sagetum* Gawl., Bakrajo, c. 750m, May 19, 1967 (9). On *Iris sisyrinchium* L. (7).

48. *Puccinia graminis* Pers. in *Syn. meth. fung.*, 228 (1801).

On *Eremopyrum buonapartis* (Spreng.) Nevski, in the desert 160 km W of Ramadi, Apr. 26, 1961 (19). On *Heteranthelium piliferum* (Banks & Sol.) Hochst., Hadran Dagh above Jindar, c. 1360m, Mosul, July 6, 1957 (10). On *Hordeum vulgare* L. (1,2,6,11). On *Poa bulbosa* L., in the northern slopes near Sarcal, c. 2250m, June 5, 1960, II (18).

49. *Puccinia graminis* Pers. f.sp. *avenae* Eriks. & Henn. in *Centralbl. f. Bakt. U. Para II Abth.* 9:590 (1902).

On *Avena sativa* L., common, Nov. (11).

50. *Puccinia graminis* Pers. f.sp. *tritici* Eriks. & Henn. in *Die Getreideste.* On *Triticum aestivum* L., Amara, Baghdad, Kut common, Apr.-May (11).

Note: Batts (TBMS 34:533, 1951) reported that this rust species causing black rust or stem rust of wheat (*Triticum aestivum* L.) weakly infects barley (*Hordeum vulgare*) and rye (*Secale cereale*) in Scotland.

51. *Puccinia gundeliae* Cke. in *Grevillea*, 9:14 (1880).

On *Gundelia tournefortii* L., Tasluja, May 28, 1960, III, Rowanduz, calcareous rocks near Zeita, June 19, 1961, III (19).

52. *Puccinia hadacii* Urban in *Uredineana*, 6:25 (1966).

On *Carduus pycnocephalus* L., Dookan Dam, c. 750m, Apr. 9, 1960, II, III, ((19)).

Note: Erroneously determined and published as *Puccinia pulvinata* Rabenh. (18).

53. *Puccinia heldreichiana* Diet. in *Hedwigia*, 28: 184 (1889).
 Symb. *Accidium asphodeli* Cast. in *Observe. sur quelques Plantes acotyledonees* 1: 34 (1842); *Accidium barbeyi* Roum. in *Rev. mycol.* 3: 25 (1881); *Accidium holzmannianum* Thuen. in *Ascherson, Bot. Zeit.* 41: 115 (1883). (nomen nudum); *Oomyces barbeyi* Roum. in *Rev. mycol.* 2: 196 (1880); *Puccinia barbeyi* P. Magnus in *Litt.* in *Ascherson, Bot. Zeit.* 47: 115 (1883).
- On *Asphodelus tenuifolius* Cav., Jabal Hamrin, Mansuriya, Mar. 4, 1960 (18); Khidr al Mai, Mar. 8, 1961, 0+1 (19); Baquba, 1967 (9).
54. *Puccinia heterophyllae* Cke. in *Grevillea* 9: 14 (1880).
 Syn. *Puccinia suareolens* (Pers.) Restr. in *Forh. Skand. Naturh. Mode, Kjobenh.* 11: 339 (1879), (8,19).
- On *Serratula cornithifolia* Boiss., Kurdistan, II+III (7). On *Serratula* sp., Rowanduz, between Sheikhan and Sakri Sakran, June 5, 1961 (19).
55. *Puccinia hieracii* Mart. in *Prod. Fl. Mosquen*, Ed. 2, 226 (1817).
 Syn. *Puccinia jaceae* Oth in *Mitt. Naturf. Ges. Bern*, 173 (1866).
 On *Centaurea virgata* L. (17). On *Cichorium intybus* L., Pusht Ashan Mt. NE of Rania, lower slope at Qandil range, c. 1100m, Sept. 27, 1957 (10). On *Crepis parviflora* Desf. (7). On *Rhagadiolus stellatus* DC. (7). On *Matricaria arghidensis* Blakelock, NE of Sairo, SE of Sairo, c. 1800m, Aug. 9, 1947. On *Matricaria* sp., Erbil, Sept. 6, 1966. On *Taraxacum montanum* DC., NE of Sairo, c. 1800m, Aug. 9, 1947 (10).
56. *Puccinia hieracii* Mart. var. *piloseiloidaeum* (Probst.) Joerst. in *Kgl. Norske Vidensk. Selsk. Skr.* 1935, 38: 27, (1936).
 On *Hieracium baubini* Bess., Sarcal, in the valley of Nowada, c. 2220m, June 9, 1960, II+III (19).

57. *Puccinia holcina* Eriks. in *Ann. Sci. Nat. Bot. Ser.* 8, 9:274 (1899).

Syns. *Puccinia fragosoi* Bub. in *Hedwigia*, 57:2 (1915), (19);
Puccinia koeleriae Politis in *Pragmatia Acad. Athens.* 3:12
(1935); *Puccinia recondita* f.sp. *holcina* Eriks. in Wilson &
Henderson, *British rust fungi*, Cambridge Univ. Press, 285
(1966); *Puccinia schismi* Bub. in *Ann. Naturh. Hofmus,*
Wien, 28:193 (1914).

On *Schismus calycinus* (L.) Duval-Jouve (3). On *Aegilops longis-*
sima Schw. & Musch., *A. triuncialis* L., Kirkuk, Sulaimaniya. On *Aegi-*
lops sp., 4 km E of Qaranjir on Kirkuk-Sulaimaniya Road, June 13, 1957;
20 km NW of Sulaimaniya, Tasluja, c. 850m, June 21, 1957. On *Bois-*
siera squamosa (Sol.) Nevski, Mosul, May 15, 1967; on *Lolium tem-*
ulentum L., Bakrajo c. 750m, May 16, 1967 (10). On *Lophochloa phleoides*
(Vill.) Reichb., in the desert between Najaf and Rutba, Apr. 2, 1961,
II+III (19). On *Taeniantherum crinitum* (Schreb.) Nevski, Zawita, c.
950m, Mosul, June, 1955. On *Triticum aegilopoides* Forsk., Mosul, May
14, 1967 (10).

Note: Urban (19) treated *P. fragosoi* Bub. as a separate species, whereas
Wilson and Henderson (1966) treat *P. schismi* Bub. as a distinct
species with *P. fragosoi* Bub. as its synonym. Greene and Cum-
mins (5) treat both of them synonyms of *P. holcina* Eriks.

58. *Puccinia hordei* Otth. in *Mitt. Naturh. Ges. Berl.*, 1870, 114 (1871).
On *Hordeum vulgare* L., common, Apr. (11).

59. *Puccinia lineatula* Bub. in *Ann. Naturh. Hofmus. Wien.*, 28:189
(1914).

On *Heteranthelium piliferum* (Banks & Sol.) Hocht., Kurdistan,
II,III. On *Hordeum bulbosum* L., Kurdistan, II+III, Kurdistan (3).

60. *Puccinia lojkajana* Thuem. in *Oesterr. Bot. Zeit.*, 26:183 (1876).

On *Ornithogalum narbonense* L., southern slopes of Helgurd Mt.,
c. 2300m, June 7, 1960, III; Rowanduz, Hassar-i-Sakran valley, June
7, 1961, III (19).

61. *Puccinia malvacearum* Mont. in *Hist. Fis. Polit. Chile*, 8:43 (1852).

On *Althaea rosea* (L.) Cav., Rowanduz, June 4, 1961, III (19); Dookan Dam, May 17, 1967. On uncultivated *Althaea* spp., Bakrajo, Sarchinar, c. 750m, May 15, 1967 (10). On *Malva parviflora* L., Bakrajo, May 20, 1947 (6,11).

62. *Puccinia maydis* Bereng in *Atti VI, Riuino. Sc. Ital, Milano*, 475 (1844).

Syn. *Puccinia sorghi* Schw. in *Fg. Americ.*, 295.

On *Zea mays* L., Sept., common (6,9,11).

63. *Puccinia menthae* Pers. in *Syn. Meth. Fung.*, 227 (1801).

On *Mentha sylvestris* L., Kurdistan (6,11,17).

64. *Puccinia menthae* Pers. var. *menthae* Urban in *Uredineana*, 6:31 (1966).

On *Mentha longifolia* (L.) Huds., Derbandi-i-Basian, between Kirkuk and Sulaimaniya, May 26, 1960, II+III (19).

65. *Puccinia notobasidis* Conz.-Frag. in *Mroteria*, 22:52 (1926).

On leaves and stems of *Notobasis syriaca* (L.) Coss, Kifri, c. 250m, Kirkuk, Apr. 12, 1947; Sarchinar, c. 750m, May 15, 1967; Gali Ali Beg, Rowanduz Gorge, c. 1080m, Erbil, Sept. 3, 1967 (10).

66. *Puccinia opopanicis* Ces. in *Bull. Club Alpes Ital*, 150 (1873).

On *Opopanax hispidum* Griseb., 20 km NWN of Sulaimaniya, c. 850m, June 21, 1957 (10).

67. *Puccinia persica* Wettst. in *Hedwigia*, 115 (1887).

On *Centaurea aegyptiaca* L., *C. cardunculus* Boiss., *C. rigida* Willd. (14).

Note: It is probable that the Iraqi records of *P. persica* by Petrak (14) are identical with *P. calcitrapae* (19).

68. *Puccinia phlomidis* Thuem. in *Bull. Soc. imp. Nat. Moscou*, 53:216 (1878).

On *Phlomis armeniaca* Willd., 20 km E of Balad Sinjar, Mar. 20, 1961, 0+I (19).

Note: Collected near Erbil on this host and identified as *Accidium phlomidis* Thuem. (7).

69. *Puccinia picris-strigosae* P. & H. Syd. in *Mon. Ured. I*:131 (1902).

On *Picris* sp. (14), Sulaimaniya, Nalparaiz, May 25, 1961, II+III, 1961 (7).

70. *Puccinia pimpinellae* (Strauss) Roehl. in *Deutschl. Fl. Ed. 2*, 3:131 (1813).

On *Pimpinella affinis* Ledeb. (7). On *P. brachyclada* Rech. F. et Riedl., 47-50 km N of Rowanduz, c. 1000m, Erbil, Aug. 23, 1957. On *P. kotschyama* Boiss. (7,14,15), 47-50 km N of Rowanduz, c. 1000m, Erbil, Aug. 23, 1957 (10). On *P. puberula* DC. (7). On *P. sintenisii* H. Wolf. (14). On *P. tragium* Vill. (7). On *P. tragium* Vill. var *pseudotragium* (DC.) Boiss., c. 680m, Erbil, Aug. 3, 1947; Derband village, 47 km N of Rowanduz. On mountain slope, c. 1000m, Erbil, Aug. 8, 1957. On *Pimpinella* sp., Rowanduz Gorge, c. 2000m, Erbil, July 25, 1932 (10).

71. *Puccinia plicata* Kom. in *Bot. Zap. botan. Sada Spb. Univ.*, 4(2): 260 (1895).

On *Cachrys* sp. (14). On *Prangos ferulacea* (L.) Lindl., Sarcal, on the foot of Hegurd Mt., c. 2200m, June 4, 1960, III; in the valley of Hassar-i-Sakran, June 6, 1961, III (19).

72. *Puccinia polypogonis* Speg. in *Anal. Mus. Nac. Buenos Aires*, 19: 300 (1909).

On *Polypogon* sp., Apr., 1966 (10).

73. *Puccinia prostii* Moug. ex Duby in *Bot. Gall.*, 2891 (1830).
On *Tulipa stapfii* Turrill, Sarcal, in the valley of Nowada, c. 2220m, June 9, 1960, 0+III (19).
74. *Puccinia pulverulenta* Grev. in *Flor. Edin.*, 432 (1824).
On *Epilobium* sp., Chinarock, Qandil range, c. 720m, Erbil, Aug. 8, 1957 (10).
- Note: *Puccinia epilobii* DC. in *Fl. Fr.* 6:61 (1815) is a microcyclic form correlated with *Puccinia pulverulenta* Grev.
75. *Puccinia pulvillata* Lindr. in *Meddel. Stockh. Hogskol. Bot. Inst.*, 4:7 (1901).
On *Pimpinella kotschyana* Boiss., Khan Banni Saad near Baghdad, May 10, 1961, II+III. On *P. tragium* Vill. Hafigh, June 14, 1960, III. On *P. zagrosica* Boiss. & Hausskn., Rowanduz Gorge, June 14, 1960, II+III. On *Pimpinella* sp., in the pass Dar Mazala between Sulaimaniya and Qaradagh, May 28, 1961, II+III (19).
76. *Puccinia pulvinata* Rab. in *Hedwigia*, 10:20 (1871).
On *Echinops blancheanus* Boiss., Dookan Dam, c. 850m, Sulaimaniya, May 17, 1967 (10). On *Echinops* sp., near Kirkuk, between Dohuk and Sarsang (14,16); Azmir dagh near Sulaimaniya, May 26, 1960; Nalparaiz, May 25, 1961, III (19).
- Note: The examination of this fungus recorded on *Jurinea cataonica* Boiss. & Hausskn. needs revision (16).
77. *Puccinia punctata* Lk. in *Mag. Ges. Naturh. Fr. Berl.*, 7:30 (1815).
On *Rubia* sp., Oqur, between Swaratuk and Screen valley, Mosul, May 10, 1958 (10).
78. *Puccinia punctiformis* (Str.) Roehl. in *Deutschl. Fl. Ed.* 2, 3:132 (1813).

Syns. *Uredo suaveolens* Pers. in *Obs. myc.* II, 24; *Puccinia suaveolens* Rostr., *Forh. Skand. Naturf. Mode, Kjobenh.* II:339 (1874).

On *Serratula heterophylla* Desf., Kurdistan (16).

79. *Puccinia recondita* Rob. & Desm. in *Pl. Crypt. Fr.* Ser. 2, No. 252 (1882), non *P. recondita* Diet. & Holw., 1894.

Syns. *Puccinia bromina* Eriks. in *Ann. Sc. Nat.*, 271 (1899); *Puccinia recondita* f.sp. *bromina* Eriks. in Wilson & Henderson, *British Rust Fungi*, Cambridge Univ. Press, 282 (1966); *Puccinia rubigo-vera* Wint. in Rabenh. *Krypt. Fl.* Ed. 2, 1:217 (1882).

On *Bromus sterilis* L. (3). On *B. danthoniae* Trin., Tal Kochak, c. 400m, Mosul, May 21, 1948; 11 km N of Penjwin Mt., c. 1300m, Sulaimaniya, June 22, 1957. On *B. fasciculatus* Presl., Jabal Makhul near Ain Dibbs, c. 250m, Mosul Apr. 2, 1947. On *B. scoparius* L., 11 km N of Penjwin Mt., c. 1300m, Sulaimaniya, June 22, 1957. On *B. tectorum* L., Jabal Kursi Sinjar, c. 800m, Mosul, May 23, 1948. On *Bromus* sp., Jazira, about 30 km S of Sinjar, c. 320m, Mosul, Nov. 1954; 51 km NW of Sulaimaniya, Dookan highway, Kurdaruk village, c. 740m, June 14, 1957; 11 km N of Penjwin Mt., c. 1300m, June 1957 (10). On *Triticum aestivum* L., Girdabor, on the foot of Pira Magrun Mt., May 25, 1961. II. On *T. aestivum* L. cultivated between Derband and Haji Omran, June 13, 1960, II (19); common, June (11).

80. *Puccinia purpurea* Cke. in *Grevillea*, 5: 15.

On *Sorghum vulgare* Pers., Nasiriya, Oct. 1948 (6,11).

81. *Puccinia rhagadioli* (Pass.) Syd. in *Mon. Ured.* 1: 139 (1964).

On leaves and stem of *Garhadiolus hedyppnois* (Fisch. & May) Jaub. & Spach. (14), Kifri, c. 250m, Kirkuk, Apr. 4, 1947; 4 km E of Samara, May 5, 1957; 31 km N of Kirkuk on road to Koisanjak, c. 240m, Kirkuk, May 6, 1959, II,III (10).

82. *Puccinia rubigo-vera* DC. f. *lolii-loliacei* Bub. in *Ann. Naturh. Hofmus, Wien.* 28: 189 (1914).
On *Lolium loliaceum* Hand-Mazz. in the vicinity of Mosul (3).
Note: *Puccinia rubigo-vera* Wint. is a synonym of *P. recondita* Rob. & Desm.
83. *Puccinia santolinae* P. Magn. in *Hedwigia*, 49:97 (1909).
On *Achillea* sp. (14).
Note: Urban (19) is of the opinion that *Puccinia achilliae* is a brachyform, being more probably identical to *Puccinia santolinae*.
84. *Puccinia schoenanthi* Cumm. & Guyot.
On *Cymbopogon oliviera* (Boiss.) Bor, 2 km N of Kirkuk, c. 520m, June 13, 1957 (10).
85. *Puccinia serratulae-cerinthefoliae* Rayss in 'Homage Au Prof. E.C. Teodoresco', 163-175, Bucharest (1937).
On *Serratula* sp., Sulaimaniya, Kopi Qaradagh, c. 1200-1370m, June 16, 1959, II+III (18).
86. *Puccinia serratulae-oligocephalae* Syd. in *Mon. Ured.* 1:149 (1904).
On *Serratula oligocephala* DC., II+III (14).
87. *Puccinia stapifina* Petrak in *Ann. Naturh. Mus. Wien*, 52:307 (1942).
On *Phlomis armeniaca* Willd., Rowanduz: northern slopes of Bofin Mt., over 2100m, June 20, 1961, I+III (19).
88. *Puccinia stipina* Tranz. ex Kleb. in *Krypt. Fl. Mark Brand.*, 5a:477 (1913).
On *Stipa capensis* Thunb., Jabel Hamrin, Mansuriya, Mar. 4, 1960, III (19).

89. *Puccinia striiformis* West. in *Bull. Roy. Acad. Belg.*, 21(2):235 (1854).

Syn. *Puccinia glumarum* Eriks. & Henn., *Landt.-Akad. Handl. o Tidsskr.* 33:169 (1894); and *Z Pfl.-Krankh.* 4:197 (1894);
Puccinia tritici Orsted in *Sygd. Hos. Planterne*, 95 (1863).

On *Agropyron* sp., Kopi Qara Dagh, Waziara, May 29, 1961, II+III; northern slopes of Kopi Qara Dagh Mt., II+III (19). On *Heteranthelium piliferum* (Banks & Sol.) Hochst., Hadron Dagh above Jindar, c. 800m, Erbil, May 15, 1917; Khantur Mt., NE of Zakho, c. 1360m, Mosul, July 6, 1957. On *Hordeum murinum* L., Surao, c. 750m, May 10, 1943; Tal Kochak, c. 400m, Mosul, May 31, 1948 (10). On *Triticum aestivum* L., common, May (11).

90. *Puccinia syngenesiarum* Lk. in *Spec. Pl.* II, 74.

On *Acroptilon picris* (Pall.) DC., 'am Booriter' in Kurdistan, III (16).

Note: Wilson & Henderson (1966) state' that a few of the specimens of *P. syngenesiarum* issued by Cooke & Vize and also a specimen of the same species in the Johnston Herbarium at Berwick (Johnston, *Fl. Berwick*, 2, 197) have been shown to be *P. cal-citræpe* on *Carduus crispus* and *C. nutans* (Wilson, *TBMS.* 24:244, 1940).

91. *Puccinia tanacetii* LC. in *Fl. France*, 2: 222 (1805).

On *Pyrethrum* sp., Rowanduz: northern slopes of the mountain 'Botine', June 20, 1961, II,III (19).

Note: P. & H. Sydow (*Mon. Ured.*, 1:162, 1902) identified this rust probably collected many years ago by Haussknecht from Iraq, Kurdistan as *Puccinia seriata* n.sp. on *Chrysanthemum myriophyllum* (C.A. Meyer) B.F. (19).

Mathur: Checklist of Iraqi Uredinales

92. *Puccinia trabutii* Roum. & Sac. in *Michelia* 2:307 (1880).
On leaves of *Phragmites communis* Trin., Abu-Ghraib, Mar. 15, 1954 (10).
93. *Puccinia tuyutensis* Speg. in *Fungi Argent.*, 4:25 (1881).
Syn. *Puccinia cressae* (DC.) Lagerh. in *Bol. Soc. Brot.*, 131 (1889).
On *Cressa cretica* L., Baghdad, Apr. 4, 1960; in the desert near Faluja, May 13, 1960, I (19).
94. *Puccinia vincae* Berk. in Smith, *Engl. Fl.* 5(2):364 (1836).
On *Vinca libanotica* Zucc., (11).
95. *Trachyspora intrusa* (Grev.) Arth. in *Man. rusts*, 97 (1934).
On *Alchemilla kurdica* Roth., Rowanduz: Hassar-i-Sakran, June 7, 1961, II+III (19).
96. *Tranzschelia microcerasi* Tranz. & Litv. in *J. de Bot.* 24:251 (1939).
On leaves of *Cerasus microcarpa* Boiss., 35 km NW of Mosul, c. 700 m, July 2, 1957 (10).
97. *Tranzschelia pruni-spinosae* (Pers.) Diet. in *Ann. Myc.* 20:31 (1922).
Syn. *Puccinia pruni-spinosae* Pers. in *Syn. Meth. Fung.* 226 (1801).
On cultivated *Prunus*; *P. amygdalus* Batsch., *P. armeniaca* L., Castle's post, Baghdad, Aug. 28, 1941. On *P. domestica* L., Baghdad, Zakho, 1956. On *P. persica* (L.) Batsch., Khalis, June 1, 1947 (1,6,11).
98. *Uromyces acantholimonis* Syd. in *Ann. Myc.*, 4:28 (1906).
On *Acanthelimon* sp., Kurdistan (14).
99. *Uromyces acanthelimonis* Syd. var. *zagrosica* Urban in *Uredineana*, 6:46 (1966).
On *Acanthelimon* sp., in the slopes above Zawiya, Oct. 10, 1960, II (19).

100. *Uromyces anagyridis* Roum. in *Gallici* No. 743.
On *Anagyris foetida* L., Gali Ali Beg (Rowanduz Gorge), II+III,
(7).
101. *Uromyces appendiculatus* (Pers.) Unger in *Einfl. Bodens*, 216
(1836).
Syn. *Uromyces phaseoli* (Pers.) Wint. var. *typica* in *Arth. Man.*
rusts, U.S.A. & Canada, 198 (1934). (11).
On *Phaseolus vulgaris* L., common (11).
102. *Uromyces bornmulleri* P. Magn., in *Verhandl. Ges. Deutsch.*
Naturf. u. Aerzte Nurenberg (1893).
On *Bongardia chrysogonum* L., Sefin, Kurdistan, III (7).
103. *Uromyces cuenodii* Maire in Gaumann, *Rostpilze*, 232 (1959).
On leaves and stems of *Silene eriocalycina* Boiss., Haji Omran,
200-300m, W of the spring, June 14, 1959 (10).
104. *Uromyces dianthi* (Pers.) Niessl in *Verh. Nat. Ver. Brunn*, 10:162
(1872).
Syn. *Uromyces caryophyllinus* Wint. in *Rabh. Krypt. Fl.* Ed. 2
1(1):149 (1882).
On leaves and stems of *Dianthus* sp., Sharanish village, 25 km
NE of Zakho, c. 1150m, Mosul, Sept. 5, 1959 (10).
105. *Uromyces fallens* (Desm.) Kern. in *Phytopathology*, 1:6 (1911).
Syns. *Uromyces trifolii* (DC.) Lev. in *Ann. Sci. Nat. Bot. Ser. 3*,
8:371 (1847); *Uromyces trifolii-repentis* Liro in *Acta Soc.*
Fauna Fl. Fenn. 29, No. 6,15 (1906).
On *Trifolium fragiferum* L., Baghdad, Dec. 3, 1959, II+III (19).,
on *T. pratense* (L. (7).

106. *Uromyces glycyrrizae* (Rab.) Magn. in *Ber. Deutsch. Bot. Ges.*, 8:383 (1890).

On *Glycyrrhiza glabra* L., Baghdad. On *G. glandulifera* W.K., near Erbil (3). On *G. glabra* L., common (1,2,6,9,11), pass about 20 km W of Sulaimaniya, June 21, 1957 (18); Tasluja, May 28, 1961, II+III (19).

107. *Uromyces gurkeanus* P. Henn. in *Bot. Jahrb.* 17:11 (1893).

On *Lotus* sp., Qandil Mt., Pushta-a shan, Erbil, c. 1100m, July 29, 1957 (18).

108. *Uromyces gypsophilae* Cke. in *Grevillea*, 9:14 (1880).

On leaves and stems of *Gypsophila polyclada* Fenzl., Mergardreiha near Haji Omran, c. 1800m, June 21, 1947 (10).

109. *Uromyces hermonis* P. Magn. in *Verhandl. Zool. Botan. Ges. Wien*, 91 (1899).

On *Euphorbia peplus* L., Kurdistan, III (7).

110. *Uromyces iranensis* Viennet-Bourgin in *C.R. Seances Acad. Sci.*, 242:412 (1956).

On *Hordeum distichon* L., Diltawa, Mar. 16, 1960, II+III (19).

Note: According to Joerstad (*Arb. Univ. Bergen. Mat.-Naturv. Serv.*, 1960 (11): 1-34, 1961) *Uromyces turcomanicum* Katajev (*Bot. Mater. Otdel. Spor. Rost.*, 8:111, 1942), a species allied to *Uromyces iranensis* is also known from Iraq but Urban (19) could not find corresponding references.

111. *Uromyces lineolatus* (Desm.) Schroet. in *Rabenh. Fungi Europ.* No. 2077 (1876).

Syn. *Uromyces scirpi* (Cast.) Burrill in *Bot. Gaz.* 9:188 (1884).

On *Scirpus maritimus* L., Haruna, c. 700m, Aug. 8, 1947 (10).

112. *Uromyces polygoni-aviculariae* (Pers.) Karst. in *Bidr. Kanned. Finl. Nat. Folk*, 4:12 (1879).

Syn. *Uromyces polygoni* (Rabenh.) Fekl. in *Jahrb. Nass. Ver. Nat.*, 23-24 (1869).

On leaves of *Polygonum alpestre* C.A. Mey, July 8, 1957 (18); near Sharanish, Kurdistan (14); Rowanduz in the calcareous cliffs above Zeita, June 19, 1961, I+II+III (19); on *Polygonum* sp., common (1,6,9,11).

113. *Uromyces rumicis* (Schum.) Win. in *Hedwigia*, 19:37 (1880).

On *Rumex* sp., Mar. 14, 1945 (6); on *R. dentatus* L.f.sp. *mesopotamicus* Rech. f., on road between Baghdad and Mahmudiya, Feb. 8, 1961, II (19). On *R. conglomeratus* Murr., Bakrajo, c. 750m, May 16, 1967 (10).

114. *Uromyces schroeteri* De Toni in 50 Jahresb. *Schles. Ges.*, 140 (1872).

Syn. *Uromyces verruculosus* Schroet. in 50 Jahresb. *Schles. Ges.*, 140 (1872).

On *Silene eriocalycina* Boiss. (7).

Note: Saccardo (*Syll. fung.* 7:577, 1888) treats *Uromyces verruculosus* B. et Br. in *Fungi Ceylon* No. 825 (1870) nec Schroet. (1872) on *Bauhinia tomentosa* L. as a distinct species.

115. *Uromyces scutellatus* (Pers.) Lev. in *Ann. Sci. Nat. Ser. 3*, 8:371 (1847).

On *Euphorbia orientalis* L., Azmir Dagh near Sulaimaniya, May 26, 1960, III (19).

Note: Rabenhorst (16) records *Uromyces scutellata* (Pers.) Lev. on *Euphorbia tinctoria* Boiss. & Heut. from Derbend-i-Basian, Kurdistan but according to Urban (19) it refers to *Uromyces tinctoriicola* P. Magn.

116. *Uromyces silenes-ponticae* Const. in *Ann. Myc.* 14:249 (1916).
On *Silene* sp., Erbil, June 10, 1967 (10).
117. *Uromyces striatus* Schroet. var. *loti* (Blytt.) Arth. in *Man. Rusts*, U.S.A. & Canada, Lafayette, 199 (1934).
On leaves of *Lotus gebelia* Vent. var. *hirsutissimus* (Led.) Dins., Push-a-shan, 15 km NE of Rania, lower slope of Qandil range, c. 1150m, July 29, 1957 (10).
118. *Uromyces striatus* Schroet. var. *medicaginis* (Pass.) Arth. in *Man. Rusts* U.S.A. & Canada, Lafayette, 119 (1934).
On leaves of *Medicago minima* (L.) Desr., Qaranjir, between Kirkuk and Chamchamal, c. 700m, Apr. 14, 1947 (10).
- Note: Joerstad has indexed this rust as *Uromyces pisi* (DC.) Otth in *Mitt. Naturf. Ges. Bern.*, 1863, 87 (1963), in Herb. (0), Oslo.
119. *Uromyces tinctoriicola* Magn. in *Verhandl. Z.b. Ges. Wien*, 46:429 (1896).
Syn. *Uromyces sublaevis* Tranz. in *Ann. Myc.*, 7:29 (1909).
On *Euphorbia tinctoria* Boiss. & Huet., Derbend-i-Basian, Kurdistan, I+III (7). On *Euphorbia macroclada* Boiss., Safin, May 28, 1946; Dohuk, 1955; 10 km NW of Derbendi Khan, June 21, 1960; Bakrajo, c. 750m, May 15, 1967 (10).
120. *Uromyces vesicatorius* (Bub.) Nattrass in *First list of Cyperus Fungi*, 26 (1937).
Syn. *Aecidium leontices* Tranz. in *Acta Hort. Bot. Univ. Jurgevensis*, 2(2):91 (1901).
On *Leontice leontopetalum* L., Turzilla village, near Mosul, Apr. 7, 1949 (10); Shahraban, in the fields near Beini Gani, Feb. 16, 1960, I; Khan Bani Saad, in the fields, Feb. 16, 1961, 0+I+III. On *L. Leontopetalum* var. *minor* Boiss., Keisarki, Mar. 19, I (19).

121. *Uromyces viciae-fabae* (pers.) Schroet. in *Hedwigia*, 14:161 (1875).
Syn. *Uromyces fabae* (Grev.) de Bary in *Ann. Sci. Nat. Bot. Ser.*
4, 20:80 (1863), (11); *Uromyces riviae-fabae* (DC.) Otth in
Mitt. Naturf. Ges. Bern., 1863:86 (1863).

On leaves of *Vicia faba* L., Abu-Ghraib, Mar. 30, 1946; Ramadi,
May 12, 1967 (6,9,11).

FORM GENERA

122. *Uredo fragrantissimae* Urban in *Uredineana*, 6:44 (1966).

On *Archillea fragrantissima* (Forsk.) Sch. Bip., in the desert between As Salman and Shubaicha, Mar. 10, 1961, II (19).

S U M M A R Y

The literature since 1871 has been examined for references to Iraqi rusts and the nomenclatural changes have been made in this checklist due to the revision of Rules at Stockholm in 1950 and the International Code of Botanical Nomenclature as well as a better understanding of the rust taxa in modern taxonomic literature. So far altogether 115 rust species and 11 varieties are reported: MELAMPSORACEAE: *Melampsora* 8; PUCCINIACEAE: *Aecidium* 5; *Gymnosporangium* 1; *Phragmidium* 4, variety 1; *Pileolaria* 1; *Puccinia* 70, varieties 7; *Trachyspora* 1; *Tranzschelia* 2; *Uromyces* 22, varieties 3 and FORM GENUS: *Uredo* 1. The maximum number of rust species are reported on plants belonging to the angiospermic families Compositae and Gramineae.

There is still much work to be done on the rusts of Iraq.

A C K N O W L E D G E M E N T S

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HOST INDEX

(The numbers refer to entries, not pages)

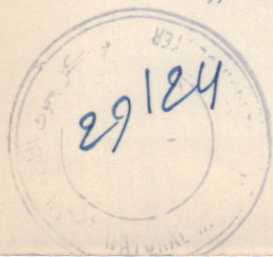
- Acantholimon sp. 98-99
 Achillea sp. 23,83
 „ albicaulis 38
 „ fragrantissima 122
 „ vermicularis 23
 Acroptilon picris 24,90
 Aegilops sp.57
 „ longissima 57
 „ triuncialis 57
 Aleuropus lagopoides 25
 Agropyron sp. 89
 Alchemilla kurdica 95
Allium cepa 26
 „ porrum 26
 „ sativum 26
 Althaea spp. 61
 „ rosea 61
 Ammi majus 46
ANACARDIACEAE 20
 Anagyris foetida 100
 Andropogon sp. 41
 Antirrhinum majus 27
APOCYNACEAE 94
 Aristida sp. 28
ARISTOLOCHACEAE 29
 Aristolochia sp. 29
 „ bottae 29
 Asphodelus tenuifolius 10,53
 Astragalus rugosus 9
 Avena fatua 40
 „ sativa 40,49
 Bellevalia glauca 10
 „ kurdistanica 10
 „ macrobotrys 10
BERBERIDACEAE 102,120
 Boissiera squamosa 57
 Bongardia (Leontice) chrysogonum **102**
 Bromus sp. 80
 „ danthoniae 80
 „ fasciculatus 80
 „ scoparius 80
 „ sterilis 80
 „ tectorum 80
 Cachrys sp. 71
 Caltha polypetala 34
 Carduus sp 33
 „ pycnocephalus 33,52
 Carthamus sp. 33.
 „ oxyacantha 33,35
CARYOPHYLLACEAE 103, 104,
 108, 114, 116
 Centaurea sp. 33
 „ aegyptiaca 67
 „ behen 33
 „ bruguierana 33
 „ cardunculus 67
 „ iberica 33
 „ myriocephala 33
 „ rigida 67

- „ solstitialis 33
„ virgata 55
Cephalaria syriaca 11
Cerasus microcarpa 96
Chrysanthemum balsamita 30
Cichorium intybus 55
Circium sp. 33
„ acerna 21
Cousinia sp 33
COMPOSITAE 21,23,24,30,33,
35,37,38,42,45,51,52,54,55,56,
65,67,69,76,78,81,83,85,86,90,
91,122
CONVOLVULACEAE 93
Crataegus sp. 14
Crataegus monogyna 14
Crepis sp. 42
„ aspera 42
„ parviflora 55
Cressa cretica 93
Cymbopogon oliviera 84
„ schoenanthus 41
Cynodon dactylon 43
CYPERACEAE 39,111
Cyperus rotundus 39
Dianthus sp. 104
Dichanthium annuulatum 36
BIOSCORACEAE 12
DIPSACACEAE 11
Echinops sp. 76
„ blancheanus 76
Epilobium sp. 74
Eremopyrum buonapartis 48
Eryngium barrelieri 46
EUPHORBIACEAE 4,5,8,109,
115,119.
Euphorbia sp. 5
„ densa 5
„ helioscopia 4
„ macroclada 4,119
„ macroclada var. schizoce-
rata 5
„ orientalis 4,115
„ peplus 4,5,109
„ tinctoria 8,119
Falcaria sp. 32
„ sioides 32
Fumaria bracteosa 13
FUMARIACEAE 13
Galium sp. 44
„ coronatum 44
Garhadiolus hedynois 81
Gladiolus sagetum 47
Glycyrrhiza glabra 106
„ glandulifera 106

Mathur: Checklist of Iraqi Uredinales

GRAMINEAE 25,28,36,40,41,43, 48,49,50,57,58,59,62,72,79,80 82,84,88,89,92,110	MALVACEAE 61 Malva parviflora 61 Matricaria sp. 55 Matricaria arlgirdensis 55 Medicago minima 118 ,, sativa 118 Mentha longifolia 64 ,, silvestris 63 Notobasis syriaca 65
Gundelia tournefortii 45,51 Gypsophila polyclada 108 Heteranthelium piliferum 48,59,89 Hieracium bauhini 56 Hordeum bulbosum 59 ,, distichon 110 ,, murinum 89 ,, vulgare 48,58	ONAGRACEAE 74 Opopanax hispidum 66 Ornithogalum narbonense 60 Phaseolus vulgaris 101 Phlomis armeniaca 68,87 Phragmites communis 92 Picnemon acarna 37 Pieris sp. 69 ,, strigosa 55 Pimpinella sp. 70,75 ,, affinis 70 ,, brachyclada 70 ,, kotschyana 70,75 ,, olivieri 75 ,, pseudotragium 75 ,, puberula 70 ,, sintenisii 70 ,, tragium 70,75 ,, tragium var. pseudotra- gium 70 ,, zagrosica 75
IRIDACEAE 47 Iris sisisyrinchium 47 Jurinea cataonica 76	
LABIATAE 31,63,64,68,87	
LEGUMINOSAE 9,100,101,105, 106,107,117,118,121	
Leontice leontopetalum 120 ,, leontopetalum var. minor 120	
LILLIACEAE 10,26,53,60,73	
LINACEAE 6 Linum nodiflora 6 ,, usitatissimum 6 Lolium loliaceum 82 ,, temulentum 57 Lophochloa phleoides 57 Lotus sp. 107 ,, gebelia var. hirsutissimum 117	

- Pistacia mutica* 20
 ,, *vera* 20
Plantago lanceolata 43
PLUMBAGINACEAE 98,99
Poa bulbosa 48
POLYGONACEAE 22,112,113
Polygonum sp. 22,112,113
 ,, *alpestre* 112
Polypogon sp. 72
Populus nigra 2,7
Poterium sp. 18
 ,, *lasiocarpum* 18
 ,, *villosum* 17
Prages ferulacea, 71
Prunus amygdalus 97,
 ,, *armeniaca* 97
 ,, *domestica* 97
 ,, *persica* 97
Pyrethrum sp. 91
Pyrus communis 14
RANUNCULACEAE 34
Rhagadiolus stellatus 55
Rosa sp. 16
 ,, *canina* 16
ROSACEAE 14,15,16,17,18,19,
 95,97,96
RUBIACEAE 44,45,77
Rubus sanctus 15,19
Rumex sp. 113
 ,, *angustifolius* 22
 ,, *conglomeratus* 113
 ,, *dentatus* f.sp. *mesopotami-*
 cus 113
 ,, *tuberosus* 22
SALICACEAE 1,2,3,7
Salix sp. 1,3
 ,, *babylonica* 1
Salvia autabulasa 31
Schismus calycinus 57
Scirpus maritimus 111
SCOPHULARIACEAE 27
Serratula sp. 54,85
 ,, *cerinthefolia* 54
 ,, *heterophylla* 38,78
 ,, *oligocephala* 86
Silene sp. 116
 ,, *ericalycina* 103,114
Silybum marianum 33
Sorghum vulgare 79
Stipa capensis 88
Taeniantherum crinitum 57
Tamus communis 12
Tanacetum sp. 45
Taraxacum montanum 55
Trifolium fragiferum 105
 ,, *pratense* 105
Triticum aegilopoides 57
 ,, *aetivum* 50,80,89
Tulipa stapfii 73
UMBELLIFERAE 32,46,66,70,71
 ,75
Vicia faba 121
Vinca libanotica 94
Zea mays 62



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