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TO MY WIFE

GENEVA ROBERTSON FISCHER

In grateful recognition of her patience during the period I was "married" to the preparation of the manuscript and for her conscientious help in the arduous task of proofreading and preparation of the index.

PREFACE

This book is a guide and quick introduction to the literature on the biology and control of some 330 species of smut fungi and the diseases they cause. It represents the essential information on the subject matter contained in more than 3,000 scientific papers, bulletins, and books. The author's expectation is that his compilation will be valuable to those engaged in teaching, research, and extension work in plant pathology, mycology, agronomy, and botany.

The purpose in preparing the book is to make quickly available what is known concerning any particular smut fungus. In embarking on a research problem, the necessity of thoroughly reviewing the literature concerning what has already been published on the subject—and on related subjects—is often discouraging. Our accumulated knowledge in the field of mycology and plant pathology is scattered through literally hundreds of series of journals, periodicals, proceedings, archives, reports, bulletins, books, etc., representing many thousands of volumes and in some cases dating back more than a hundred years. The problem is how to get in touch with the literature without spending a disproportionate amount of time at the task even with the aid of such abstracting journals as the *Review of Applied Mycology*. The answer appears to lie in extensive and exhaustive bibliographic reviews. The present work is not offered as a model or example, but the author does hope that it will give subject-matter specialists in other phases of mycology and plant pathology some encouragement or inspiration to prepare similar reviews of their own fields.

The subject-matter guide subdivides, under each smut species, the published information pertinent to that species. The intent of this arrangement is to enable one to determine at a glance, at least in a general way, what has been published regarding the control, and the several phases of the biology of each species. Using the term "biology" in a broad sense, the several phases are: Culture on Artificial Media; Cytology; Heterothallism and Sex; Hybridization and Genetics; Life History, Parasitism and Factors Affecting; Longevity of Spores; Miscellaneous Records; Physiologic Specialization; Spore Germination and Factors Affecting; and Varietal Resistance and Susceptibility. It will be noticed that the references are arranged chronologically under each heading. This is done to indicate quickly the year of the first contribution as well as the author, for historical interest at least.

Naturally, the material bears witness to the fact that the smuts of our economic crops, particularly the cereals, have been the most thoroughly investigated. Most of the other species, by comparison, have been sadly neglected and indicate a fertile field for those interested in research in the biology of the smut fungi.

It is only theoretically possible for a review of this kind to be absolutely complete. The aim has been to achieve the greatest possible degree of practical completeness, except for such species as *Tilletia caries* and *Tilletia foetida,* where there have been many hundreds of publications of a popular nature which often duplicate for purely local use information published elsewhere. Also, many hundreds of references purposely have been omitted which are merely small lists or "contributions to the flora," etc. Such publications do contribute to our knowledge of geographic distribution of the smut fungi, but since the sum of their contributions is contained in Zundel's *The Ustilaginales of the World,* a purely taxonomic treatise in which the geographic distribution of each species is given, there would be little justification for duplicating such information here.

It cannot be claimed, either, that each reference in the bibliography is fairly and completely classified in the subject-matter guide. In some instances where the author has not been able to inspect the original article and therefore has had to rely on someone else's review of it, the available information may have been incomplete, resulting in incomplete classification of the subject-matter content. Perhaps it should go without saying that a complete review of the literature on the biology and control of any one smut species should include all the references indicated for that species, irrespective of subject-matter classification. Some hundreds of species are not represented in this book. Concerning them there is either no published information about their biology and control or such information was not discovered during the author's preparation of this work. He would be grateful for having his attention called to any instance where he has not done justice to the subject-matter breakdown, relative to any reference; to reference material which has somehow been overlooked; and to textual misrepresentations and errors, of which more than a few have probably escaped detection. Such contributions and corrections will be acknowledged, accumulated, and later incorporated in a revised edition, perhaps ten years hence.

The author is indebted to many individuals and organizations for various kinds of aid given in the preparation of this book. George L. Zundel kindly gave permission to use a copy of his manuscript, *The Ustilaginales of the World,* as a guide to nomenclature, thus obviating the necessity of waiting for his contribution to appear in print. In general, the nomenclature and synonymy in the present work are

taken or adapted from Zundel's monograph. In order to make the present work as useful as possible, the author has also followed Dr. Zundel's disposition of species, even though Dr. Zundel's treatment of many species is not in agreement with the species concept held by the author. He is grateful to C. S. Holton, H. A. Rodenhiser, R. Sprague, C. G. Shaw and other colleagues for suggestions regarding organization and treatment, and to the staff of the United States Department of Agriculture Library, Washington, D. C., for their courteous and helpful attention during a period of intensive review of literature which was not elsewhere available. Likewise, the helpful suggestions of John A. Stevenson, who made available the facilities of his personal library and that of the Division fo Mycology and Disease Survey, United States Bureau of Plant Industry, Beltsville, Maryland, have left me in his debt. The sympathetic attitude of the Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils and Agricultural Engineering, United States Department of Agriculture, during the time the author was in their employ, is specifically acknowledged. He gratefully acknowledges, also, that this work was supported in part by the State College of Washington Research Fund. Finally, the author wishes to pay tribute to the invaluable assistance of several typists during the years this work has been in preparation, especially to the conscientious and highly competent efforts of the trio who suffered through the endless maze of foreign citations and technical terminology during the final preparation of the manuscript: Mrs. Roberta M. Law, Mrs. Donna I. Neumayer, and Mrs. Ava Butler.

GEORGE W. FISCHER

Pullman, Washington
December, 1950

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Protomyces bizzozerianum Sacc., Mycol. Ven. 889. 1876.
Entyloma bizzozerianum Sacc., Michelia 2: 135. 1880.

CYTOLOGY
2416 Rawitscher 1922
2732 Seyfert 1927
HETEROTHALLISM AND SEX
770 Fisch 1884 (sporidial fusions)
2416 Rawitscher 1922 (denies fusions)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
770 Fisch 1884
2730 Setchell 1892
315 Brefeld 1895
1148 Hennings 1903
2416 Rawitscher 1922
2732 Seyfert 1927
MISCELLANEOUS
Symptoms and morphology 315 Brefeld 1895
Symptoms and morphology 2655 Schellenberg 1911
Formation of clamp connections on the mycelium 2732 Seyfert 1927
Host range and morphology 1724 Liro 1938
PHYSIOLOGIC SPECIALIZATION
598 Davis 1903
SPORE GERMINATION AND FACTORS AFFECTING
770 Fisch 1884
340 Briard 1886
3039 Trelease 1886
2730 Setchell 1892
315 Brefeld 1895
2655 Schellenberg 1911
2416 Rawitscher 1922 (including cytology of)
2732 Seyfert 1927

DOASSANSIOPSIS NYMPHAEAE (Sydow) Thirum. Mycologia 39: 604. 1947.

Doassansia nymphaeae Sydow, Ann. Mycol. 10: 405. 1912.

MISCELLANEOUS
Symptoms and morphology 2971 Thirumalachar 1947

ENTORRHIZA ASCHERSONIANA (P. Magnus) Lagerh. Hedwigia 27. 262. Aug. 1888. (DeToni in Sacc. Syll. Fung. 7 (2): 497. 28 Oct. 1888.)

Schinzia cypericola Magnus, Verh. Bot. Prov. Brandenb. 20: 54. 1878. p.p.
Entorrhiza cypericola C. Weber, Bot. Ztg. 42: 378. 1884.
Schinzia aschersoniana P. Magnus. Ber. Deutschen Bot. Ges. 6: 103. 1888.
Entorrhiza janci Bref., Unters. Gesammt. Myk. 15: 80. 1912.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3185 Weber 1884
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Morphology 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
3185 Weber 1884
2710 Schwarz 1910
2655 Schellenberg 1911
321 Brefeld 1912

ENTORRHIZA CYPERICOLA (P. Magnus) DeToni Sacc. Syll. Fung. 7 (2): 498. 1888. Not Weber.

Schinzia cypericola P. Magnus, Verh. Bot. Ver. Brandenb. 20: 53. 1878.

MISCELLANEOUS
Generic positions 1813 Magnus 1879
Morphology and symptoms 1816 Magnus 1888
Morphology and symptoms 2655 Schellenberg 1911
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1821 Magnus 1893

ENTORRHIZA DIGITATA Lagerh. Hedwigia 27: 263. 1888.

Entorrhiza cypericola Trail, Scot. Nat. N. S. 1: 241–243. 1884.
Schinzia digitata Magnus, Jahresb. Naturf. Ges. Graubündens N.F. 34: 7. 1890.
Schinzia cypericola Swanton, Brit. Plant Galls, p. 141. 1912.
Entorrhyza aschersoniana Lind, Danish Fungi, p. 271. 1913.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2710 Schwarz 1910
760 Ferdinandsen and Winge 1914
MISCELLANEOUS
Morphology and symptoms 1605 Lagerheim 1888
Morphology 2655 Schellenberg 1911
Morphology 1724 Liro 1938

ENTORRHIZA ISOËTES (Rostr.) Liro Lunnon Ystava 38: 110. 1934.

Ustilago isoëtes Rostr., Bot. Tidsskr. 26: 306, 316. 1905.

MISCELLANEOUS
Morphology and symptoms 1724 Liro 1938

ENTORRHIZA RAUNKIAERIANA Ferd. and Winge Dansk. Bot. Archiv. 2: 8. 1914.

MISCELLANEOUS
Morphology 1724 Liro 1938

ENTORRHIZA SCIRPICOLA (Correns) Sacc. and H. and P. Sydow. Sacc. Syll. Fung. 14: 425. 1900.

Schinzia scirpicola Correns, Hedwigia 36: 40. 1897.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Morphology 1724 Liro 1938

ENTYLOMA ANTENNARIAE Liro Ann. Acad. Sci. Fenn. A, 42: 131. 1938.

MISCELLANEOUS
Morphology and relationship to other *Entyloma* spp. on Compositae 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING
1716 Liro 1904

ENTYLOMA ARNICALE Ell. and Ev. (N. A. Fungi 3136; hyponym. 1894); Bull. Torr. Bot. Club 22: 57. 1895.

Ramularia arnicalis Ell. and Ev., Proc. Acad. Nat. Sci. Philadelphia, 1891: 85.
Entyloma calendulae Fragoso, Bol. R. Soc. Esp. Hist. Nat. 24: 122. 1904. p.p.
Entyloma arnicae H. and P. Sydow (nom. nud.), Ann. Mycol. 16: 244. 1918.

MISCELLANEOUS
Incidence in North America and relationship to other species on Compositae 2627 Savile 1947

ENTYLOMA ARNOSERIDIS H. and P. Sydow Ann. Mycol. 16: 244. 1918 (nom. nud.).

CULTURE ON ARTIFICIAL MEDIA
1424 Kaiser 1936

ENTYLOMA ASCHERSONII (Ule) Woronin Abh. Senckenberg Naturf. Ges. 12: 580. 1882.

Sorosporium aschersonii Ule, Hedwigia 17: 18. 1878.
Ustilago magnusii Wint., Rabenh. Krypt. Fl. 1: 87. 1881. p.p.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3266 Woronin 1882

SPORE GERMINATION AND FACTORS AFFECTING
3266 Woronin 1882

ENTYLOMA AUSTRALE Speg. Anal. Soc. Cien. Argent. 10: 5. Jl. 1880.

Protomyces physalidis Kalchb. and Cooke, Grevillea 10: 22. 1880.
Entyloma besseyi Farl., Bot. Gaz. 8: 275. 1883.
Entyloma physalidis Wint., Hedwigia 22: 130. 1883.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1047 Hanna 1938
MISCELLANEOUS
Two distinct types of conidia 1047 Hanna 1938

ENTYLOMA BELLIDIASTRI Maire Österr. Bot. Zeitschr. 57: 274. 1907.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

ENTYLOMA BELLIDIS Krieger Hedwigia 35: 145. 1896.

MISCELLANEOUS
Symptoms and morphology 2655 Schellenberg 1911

ENTYLOMA BORAGINIS Cif. Bull. Soc. Bot. Ital. 1924: 52. 1924.

Entyloma serotinum Schröt., in Beitr. Biol. Pflanz. (Cohn) 2: 437. 1877. p.p.
Entyloma canescens Schröt., Maire in Bull. Soc. Bot. France 48: 208. 1903.

MISCELLANEOUS
Considered as *E. fergusoni* phys. f. *boraginis* 1424 Kaiser 1936

ENTYLOMA CALENDULAE (Oud.) DeBary Bot. Ztg. 32: 105. 1874.

Protomyces calendulae Oud., Arch. Neerl. 8: 384. 1873.

CULTURE ON ARTIFICIAL MEDIA
2838 Stempell 1935
CYTOLOGY
2231 Paravicini 1917
2838 Stempbell 1935
1424 Kaiser 1936
HETEROTHALLISM AND SEX
2231 Paravicini 1917 (sporidial fusions)
1424 Kaiser 1936
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
617 DeBary 1874
2838 Stempbell 1935
1424 Kaiser 1936
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Segregation into eight species on basis of host specialization as observed in field 2901 Sydow 1918
Description of disease and organism on dahlia 817 Flachs 1927
Formation of clamp connections on the mycelium 2732 Seyfert 1927
Incidence and symptoms in Germany 1898 Mehlisch 1935
Chlamydospores in culture 2838 Stempell 1935
Host range, morphology, and relation to similar species 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
617 DeBary 1874

619 DeBary 1887
1843 Maire and Marguery 1898
2625 Schellenberg 1911
2231 Paravicini 1917
2416 Rawitscher 1922
2838 Stempell 1935
1424 Kaiser 1936

ENTYLOMA CHRYSOSPLENII (Berk. and Br.) Schröt. In Cohn Beitr. z. Biol. d. Pflanz. 2: 372, 439. 1877.

Protomyces chrysosplenii Berk. and Br, Ann. Mag. Nat. Hist. VI, 15: 36. 1875.

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911
Clamp connections on the mycelium 2732 Seyfert 1927

SPORE GERMINATION AND FACTORS AFFECTING

1839 Maire 1900

ENTYLOMA COLLINSIAE Harn. Bull. Calif. Acad. Sci. 1: 40. 1884.

MISCELLANEOUS

Incidence in Oregon on Collinsia 1338 Jackson 1920

ENTYLOMA COMPOSITARUM Farl. Bot. Gaz. 8: 275. 1883.

Entyloma erigerontes Sydow, Ann. Mycol. 16: 244. 1918.
Entyloma madiae Cif., Atti R. Ist. Bot. Pavia III, 1: 88. 1924. (On *Madia glomerata* Hook).
Entyloma incertum Cif., Ann. Mycol. 26: 38. 1928. (On *Bidens chrysanthemoides* Michx).
Entyloma eupatorii Cif., Ann. Mycol. 26: 38. 1928. (On *Eupatorium urticaefolium* Reichard).
Entyloma wisconsiniense Cif., Ann. Mycol. 26: 40. 1928. (On *Senecio aurens* L.).
Entyloma helenii Cif., Ann. Mycol. 26: 40. 1928. (On *Helenium autumnale* L.).
Entyloma lepochydis Cif., Ann. Mycol. 26: 41. 1928. (On *Lepochys pinnata* (Vent.) T. and F.).
Entyloma davisii Cif., Ann. Mycol. 26: 43. 1928. (On *Rudbeckia hieta* L.).
Entyloma anceps, Cif., Ann. Mycol. 26: 44. 1928. (On *Rudbeckia lacinata* L.).
Entyloma boltoniae Cif., Ann. Mycol. 26: 47. 1928. (On *Boltonia asteroides* (L.) L'Her.).

MISCELLANEOUS

Emended description and comparison with other species on Compositae 2627 Savile 1947
Association of *Stagonospora* sp. with on *Ambrosia* 2627 Savile 1947

ENTYLOMA CORYDALIS DeBary Bot. Ztg. 32: 104. 1874.

MISCELLANEOUS

Morphology and symptoms 2655 Schellenberg 1911
Host range and morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING
617 DeBary 1874

ENTYLOMA CORYDALIS-LUTEAE Voglino Bull. Soc. Bot. Ital. 1896: 36.

MISCELLANEOUS
Morphology 2625 Schellenberg 1911
SPORE GERMINATION AND FACTORS AFFECTING
2625 Schellenberg 1911

ENTYLOMA CRASTOPHILUM Sacc. Michelia 1: 540. 1879.

Thecaphora dactylidis Pass., in Fisch. v. Waldh., Apercu, 34. 1877.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Host range 1724 Liro 1938

ENTYLOMA DAHLIAE H. and P. Sydow. Ann. Mycol. 10: 36. 1912.

Entyloma dahliae Unamuno, in herb.; Fragoso, in Bot. R. Soc. Espan. Hist. Nat. 24: 123. 1924.
Entyloma unamunoi Cif., Atti R. Ist. Univ. Pavia, n.s. 1: 101. 1924.
Entyloma calendulae (Oud.) DeBary forma *dahliae* Viegas, Bragantia 4: 748. 1944.

CONTROL
984 Green 1932
2532 Roekens 1946
3128 Viennot-Bourgin 1947
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2228 Pape 1926
984 Green 1932
3128 Viennot-Bourgin 1947
MISCELLANEOUS
Considered a form (f. sp. *dahliae*) of *E. calendulae* 2840 Sternon 1918
Incidence near Paris 82 Arnaud and Arnaud 1925
Incidence and description of disease in Germany 2228 Pape 1926
Description of disease 984 Green 1932
Incidence in Sumatra and Guatemala 2207 Palm 1932
Incidence and symptoms in Germany 1898 Mehlisch 1935
Longevity of spores; at least 10 years 779 Fischer 1936
First report from Palestine and Mediterranean region 2419 Rayss and Zwirn 1946
Severity in Belgium 2532 Roekens 1946
SPORE GERMINATION AND FACTORS AFFECTING
617 DeBary 1874
2228 Pape 1926
984 Green 1932

VARIETAL RESISTANCE AND SUSCEPTIBILITY
984 Green 1932
2207 Palm 1932

ENTYLOMA ERYNGII (Corda) DeBary, Bot. Ztg. 32: 105. 1874.

Physoderma eryngii Corda, Icon. Fung. 3: 3. 1839.
Protomyces eryngii Fuck., Symb. Mycol. 75. 1869.
Entyloma eryngii-plani Cif., Bull. Soc. Bot. Ital. 1924: 54. 1924.

MISCELLANEOUS
Longevity of spores; at least 11 years 779 Fischer 1936
SPORE GERMINATION AND FACTORS AFFECTING
617 DeBary 1874
3266 Woronin 1882

ENTYLOMA ESCHSCHOLTZIAE Harkn. Calif. Acad. Sci. 1: 40. 1884.

MISCELLANEOUS
Taxonomic study of, with other species on Papaveraceae 2625 Savile 1946

ENTYLOMA FERGUSSONI (Berk. and Br.) Plowr. British Uredineae and Ustilagineae, 289. 1889.

Protomyces fergussoni Berk. and Br., Ann. Mag. Nat. Hist. IV. 15: 36. 1875.
Entyloma canescens Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 273. 1877.

CULTURE ON ARTIFICIAL MEDIA
1424 Kaiser 1936
CYTOLOGY
1424 Kaiser 1936
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2655 Schellenberg 1911
1424 Kaiser 1936
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Host range and morphology 1724 Liro 1938
PHYSIOLOGIC SPECIALIZATION
1424 Kaiser 1936
SPORE GERMINATION AND FACTORS AFFECTING
2698 Schröter 1877
2329 Plowright 1889
2655 Schellenberg 1911
1424 Kaiser 1936

ENTYLOMA FUSCUM Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 373. 1877.

Entyloma fuscellum Rabenh., Fung. Europ. 2495. 1878.
Entyloma bicolor Zopf., Rabenh., Fung. Europ. 2496. 1878.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2698 Schröter 1877

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Incidence and symptoms in Germany 1898 Mehlisch 1935
Host range and history 1724 Liro 1938
Taxonomic study of, with other species on Papaveraceae 2625 Savile 1946
SPORE GERMINATION AND FACTORS AFFECTING
2655 Schellenberg 1911

ENTYLOMA GLAUCII Dang. Le Botaniste 4: 12. 1894.

Entyloma fuscellum Sacc., in Herb.

CYTOLOGY
578 Dangeard 1891
581 Dangeard 1894
HETEROTHALLISM AND SEX
579 Dangeard 1892
581 Dangeard 1894
762 Ferry 1895
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
578 Dangeard 1891
581 Dangeard 1894
762 Ferry 1895
MISCELLANEOUS
Should be included in *E. fuscum* 2625 Savile 1946

ENTYLOMA HIERACII H. and P. Sydow Ann. Mycol. 16: 244. 1918. nom. nud.

Entyloma calendulae f. *hieracii* Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 439. 1876.

MISCELLANEOUS
Host range and morphology 1724 Liro 1938

ENTYLOMA IRREGULARE Johans. Oefvers, Kongl. Svensk. Vet. Akad. Förh. 41: 159. 1885.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

ENTYLOMA LEPROIDEUM Trabut Compt. Rend. Acad. Sci. Paris 118: 1288–1289. 1894.

MISCELLANEOUS
Symptoms and morphology but no formal description of the species 3028 Trabut 1894

ENTYLOMA LINARIAE Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 371. 1877.

CULTURE ON ARTIFICIAL MEDIA
1047 Hanna 1938
CYTOLOGY
1047 Hanna 1938

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Produces two distinct types of conidia 1047 Hanna 1938
Host range and morphology 1724 Liro 1938

ENTYLOMA LOBELIAE Farl. Bot. Gaz. 8: 275. 1883.

CULTURE ON ARTIFICIAL MEDIA
1047 Hanna 1938
CYTOLOGY
1047 Hanna 1938
MISCELLANEOUS
Only one type of conidia produced 1047 Hanna 1938

ENTYLOMA MAGNUSII (Ule) Wor. Abh. Senc. Nat. Ges. 12: 580 1882.

Sorosporium magnusii Ule, Hedwigia 17: 20. 1878.
Ustilago magnusii Wint., Rabenh. Krypt. Fl. 1: 87. 1881. p.p.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3266 Woronin 1882
MISCELLANEOUS
Host range and morphology 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
3266 Woronin 1882

ENTYLOMA MATRICARIAE Rostr. Thüm., Mycoth. Univ. 222 1884.

Entyloma matricariae Trail, Plowr., Brit. Ured. and Ust. 291. 1889.
Entyloma trailii Massee, Brit. Fungi No. 192. 1891.
Entyloma leucanthi H. and P. Sydow, Ann. Mycol. 1: 237. 1903.
Entyloma lagerheimi Cif., Atti R. Ist. Bot. Univ. Pavia, n.s. 1: 92. 1924.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

ENTYLOMA MELILOTI McAlp. Smuts of Australia 195. 1910.

MISCELLANEOUS
Two distinct types of conidia produced 1047 Hanna 1938

ENTYLOMA MENISPERMI Farl. and Trel. Bot. Gaz. 8: 275. 18

CULTURE ON ARTIFICIAL MEDIA
1047 Hanna 1938
CYTOLOGY
1047 Hanna 1938
MISCELLANEOUS
Produces two distinct types of conidia 1047 Hanna 1938

ENTYLOMA MICROSPORUM (Unger) Schröt. Rabenh. Fu Europ. 1872. 1874.

Protomyces microsporum Unger, Exanth. Pflanz. 343. 1883.
Entyloma ungerianum DeBary, Bot. Ztg. 32: 105. 1874.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
617 DeBary 1874
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Host range 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
617 DeBary 1874
2329 Plowright 1889

ENTYLOMA NEPHROLEPIDES Racib. Parasit. Alg. u. Pilz. Javas 3: 8. 1900.

MISCELLANEOUS
Morphology and symptoms 2394 Raciborski 1900
SPORE GERMINATION
2394 Raciborski 1900

ENTYLOMA NYMPHAEAE (D. D. Cunningham) Setchell Bot. Gaz. 19: 189. 1894.

Ramphospora nymphaeae D. D. Cunningham, Sci. Med. Off. Army India 3: 32. 1888.
Entyloma castaliae Holw., Davis in Trans. Wis. Acad. Sci. 11: 174. 1897.

CULTURE ON ARTIFICIAL MEDIA
1047 Hanna 1938
CYTOLOGY
2392 Raciborski 1896
2393 Raciborski 1897
1751 Lutman 1910
MISCELLANEOUS
Only one type of conidia produced 1047 Hanna 1938
Host range and morphology 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
563 Cunningham 1888
2392 Raciborski 1896
596 Davis 1896 (as *E. castaliae*)
2393 Raciborski 1897

ENTYLOMA ORYZAE H. and P. Sydow Ann. Mycol. 12: 197. 1914.

MISCELLANEOUS
Incidence in lower Mississippi Valley in U. S. 3059 Tullis 1934

ENTYLOMA POLYSPORIUM (Peck) Farl. Bot. Gaz. 8: 275. 1883.

Protomyces polysporius Peck, Thüm, Mycoth. Univ. 1813. 1881.

CULTURE ON ARTIFICIAL MEDIA
1047 Hanna 1938
MISCELLANEOUS
Emended description and comparison with other species on Compositae 2627 Savile 1947

ENTYLOMA RANUNCULI (Bonorden) Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 370. 1877.

Fusidium ranunculi Bonorden, Handb. Mycol. 43. 1851.
Protomyces ficariae Cornu and Roze, Bull. Soc. Bot. (France) 22: 161. 1874.
Entyloma ungerianum f. *ficariae* Wint., Rabenh. Fungi Europ. 1873. 1874.
Entyloma ficariae Thüm. (see Mycoth. Univ. 219), Fisch. v. Waldh., Bull. Soc. Nat. Imp. Mosc. 4: 309. 1877.
Entyloma verruculosum Fisch v. Waldh., Bull. Soc. Imp. Nat. Mosc. 4: 310. 1877. p.p.

CULTURE ON ARTIFICIAL MEDIA
312 Brefeld 1889
2838 Stempell 1935

CYTOLOGY
1459 Kharbush 1927
2838 Stempell 1935

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2698 Schröter 1877
312 Brefeld 1883
3180 Ward 1887
2655 Schellenberg 1911
2838 Stempell 1935

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Conidial stage = *Fusidium leptospermum* Pass. 1689 Lind 1913
Destructive effects on Helleborus niger in France 79 Arnaud 1919
Clamp connections on the mycelium 2732 Seyfert 1927
Chlamydospores in culture 2838 Stempell 1935
Two distinct types of conidia produced 1047 Hanna 1938
Host range and morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING
617 DeBary 1874
3180 Ward 1887
2329 Plowright 1889
2655 Schellenberg 1911

ENTYLOMA SEROTINUM Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 437. 1877.

Entyloma luteo-maculans Hume, Proc. Iowa Acad. Sci. 9: 238. 1902.

CULTURE ON ARTIFICIAL MEDIA
1853 Marchal and Sternon 1924
1424 Kaiser 1936 Marchal and Sternon's cultures are of some other fungus

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Incidence and symptoms in Germany 1898 Mehlisch 1935
Host range and morphology 1724 Liro 1938

ENTYLOMA THALICTRI Schröt. Krypt. Fl. Schles. 3: 282. 1887.

Entyloma ranunculi f. *thalictri* Farl., Bot. Gaz. 8: 275. 1883.

MISCELLANEOUS

Morphology 2655 Schellenberg 1911

Host range and morphology 1724 Liro 1938

ENTYLOMA TRIGONELLAE Stevenson Mycologia 38: 524–533. 1946.

MISCELLANEOUS

Morphology, with technical description and Latin diagnosis 2848 Stevenson 1946

ENTYLOMA VERRUCULOSUM Pass. Nouvo Gior. Bot. Ital. 9: 239. 1877.

MISCELLANEOUS

Morphology 2655 Schellenberg 1911

FARYSIA NIGRA G. H. Cunningham Trans. New Zeal. Inst. 56: 78. 1926.

Elateromyces niger G. H. Cunningham, Trans. New Zeal. Inst. 55: 416. 1924.

MISCELLANEOUS

Technical description and Latin diagnosis 564 Cunningham 1924

SPORE GERMINATION AND FACTORS AFFECTING

564 Cunningham 1924

FARYSIA OLIVACEA (DC.) H. and P. Sydow Ann. Mycol. 17: 41. 1919.

Uredo olivacea DC., Fl. France 6: 78. 1815.
Caeoma olivaceum Schlecht., Fl. Berol. 2: 130. 1824.
Erysibe olivacea Wallr., Fl. Crypt. Germ. 2: 215. 1833.
Ustilago olivacea Tul., Ann. Sci. Nat. III. 1847.
Ustilago thümenii Fisch. v. Waldh., Hedwigia 17: 40. 1878.
Ustilago olivacea Tul. var. *pseudo-cyperi* Sacc., Ann. Soc. Cien. Argentina 11: 21. 1881.
Ustilago olivacea forma *pseudocyperi* Sacc., Syll. Fung. 7: 463. 1888.
Ustilago catenata Ludwig, Zeit. Pflanz. 3: 139. 1893.
Cintractia caricicola P. Henn., Hedwigia 34: 325. 1895.
Ustilago subolivacea P. Henn., Ann. R. Istit. Bot. Roma 6: 84. 1897.
Ustilago caricicola Tracy and Earle, Bull. Torr. Bot. Club 26: 493. 1899.
Elateromyces olivacea Bubak, Houby Ceske 2: 32. 1912.
Stilbella olivacea Jaap, Ann. Mycol. 14: 43. 1916.
Farysia olivacea Hönel, Ann. Mycol. 15: 293. 1917.
Farysia americana Cif., Ann. Mycol. 29: 73. 1931.
Farysia zeylanica Liro, Ann. Bot. Soc. Zool.-Bot. Vanama 6: 7. 1935.
Farysia catenata Sydow, Ann. Mycol. 35: 26. 1937.
Farysia caricis (DC.) Liro, Ann. Sci. Fenn. A, 42: 49. 1938.

CULTURE ON ARTIFICIAL MEDIA

312 Brefeld 1883

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2327 Plowright 1881

312 Brefeld 1883

2395 Raciborski 1909
1763 McAlpine 1910
321 Brefeld 1912
772 Fischer 1920

MISCELLANEOUS

Symptoms and morphology 312 Brefeld 1883
Symptoms and morphology 1763 McAlpine 1910
Symptoms and morphology 2655 Schellenberg 1911
Host range 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

312 Brefeld 1883
2329 Plowright 1889
1763 McAlpine 1910
564 Cunningham 1924
3279 Yen 1937
1724 Liro 1938

GLOMOSPORIUM AMARANTHI Hirschh. Mycologia 37: 280. 1945

MISCELLANEOUS

Morphology, symptoms and comparison with *G. leptideum* 1212 Hirschhorn 1945

GLOMOSPORIUM LEPTIDEUM (Sydow) Kochman Acta. Soc. Bot. Polon. 16: 58. 1939.

Tolyposporium leptideum Sydow, Ann. Mycol. 11: 365. 1913.
Thecaphora leptideum Zundel, Mycologia 29: 583. 1937.

MISCELLANEOUS

Tolyposporium leptideum type of genus 1511 Kochman 1939

SPORE GERMINATION AND FACTORS AFFECTING

1511 Kochman 1939

MELANOPSICHIUM AUSTRO-AMERICANUM (Speg.) G. Beck Ann. Nat. K. K. Hofmus. (Wien) 9: 122. 1894.

Ustilago austro-americana Speg., Ann. Soc. Cien. Argent. 12: 63. 1881.
Sphacelotheca austro-americana Liro, Ann. Acad. Sci. Fenn. A, 17: 150. 1924.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2902 Sydow and Butler 1907
1763 McAlpine 1910
1720 Liro 1924
1972 Moesz 1927

MISCELLANEOUS

History and morphology 1720 Liro 1924
Reasons for placing in Sphacelotheca 1720 Liro 1924
Host range 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896
2902 Sydow and Butler 1907

MELANOPSICHIUM ELEUSINIS (Kulk.) Mundk. and Thirum. Imp. Mycol. Inst. Mycol. Pap. No. 16. 1946.

Ustilago eleusinis Kulk., Ann. Appl. Biol. (India) 9: 184–186. 1922.
Ustilago eleusinis H. Sydow, Ann. Mycol. 27: 421. 1929.

CYTOLOGY
2975 Thirumalachar and Mundkur 1947
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1589 Kulkarni 1922
1776 McRae 1929
2975 Thirumalachar and Mundkur 1947
MISCELLANEOUS
Morphology and symptoms 1589 Kulkarni 1922
Morphology and symptoms 2975 Thirumalachar and Mundkur 1947
SPORE GERMINATION AND FACTORS AFFECTING
1589 Kulkarni 1922
2975 Thirumalachar and Mundkur 1947

MELANOPSICHIUM EMODENSIS (Berk.) Zundel Ustilaginales of the World

Ustilago emodensis Berk., in Hooker's Jour. of Botany 3: 202. 1851.
Ustilago treubii Solms, Ann. Jour. Bot. (Buitenzorg) 6: 79. 1887.
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HETEROTHALLISM AND SEX
2777 Solms 1887 (fusion of sporidia)
MISCELLANEOUS
Morphology and symptoms 2777 Solms 1887
Type of species of genus Liroa; Latin diagnosis n. gen. and n. sp. 470 Ciferri 1933
SPORE GERMINATION AND FACTORS AFFECTING
2777 Solms 1887

MELANOTAENIUM CINGENS (Beck.) Magnus Österr. Bot. Zeitschr. 42: 38. 1892.

Ustilago cingens Beck, Österr. Bot. Zeitschr. 31: 313. 1881.
Melanotaenium caulinum Schröt., Krypt. Schles. 3: 285. 1887. (based on *Ustilago calium* Schneider in litt. 1871 as per Magnus 1892).
Cintractia ? cingens DeToni, Sacc. Syll. Fung. 7: 481. 1888.

MISCELLANEOUS
Morphology and symptoms 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
SPORE GERMINATION AND FACTORS AFFECTING
1422 Juel 1894
315 Brefeld 1895

MELANOTAENIUM ENDOGENUM (Unger) DeBary Bot. Ztg. 32: 106. 1874.

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Protomyces galii Nees., Das Syst. d. Pilze. p. 10. 1837.
Physoderma endogenum Cornu, Ann. Sci. Nat. Bot. VI. 15: 291. 1883.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3266 Woronin 1882
1689 Lind 1913
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Host range 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
3266 Woronin 1882
2655 Schellenberg 1911

MELANOTAENIUM HYPOGAEUM (Tul.) Schellenb. Beitr. Krypt. Schweiz 3: 108. 1911.

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Ustilago hypogaea Fisch. v. Waldh., Apercu Syst. Ustilag. p. 18. 1877.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2655 Schellenberg 1911
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

MELANOTAENIUM LAMII Beer Trans. Brit. Mycol. Soc. 6: 331–343. 1920.

MISCELLANEOUS
Morphology and general considerations of the entire genus 183 Beer 1920
CYTOLOGY
183 Beer 1920

MUNDKURELLA HEPTAPLEURI Thirum. Mycologia 36: 596. 1944.

CYTOLOGY
2969 Thirumalachar 1944
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2969 Thirumalachar 1944
SPORE GERMINATION AND FACTORS AFFECTING
2969 Thirumalachar 1944

NEOVOSSIA BARCLAYANA Bref. Unters. Gesammt. Myk. 12: 170. 1895.

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CONTROL
436 Chevalier 1931
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895

MISCELLANEOUS
Morphology and symptoms 315 Brefeld 1895
Possible incidence on *Pennisetum typhoideum*, in Senegal 436 Chevalier 1931
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

NEOVOSSIA HORRIDA (Takahashi) Padwick and Azmatullah Khan Imp. Mycol. Inst. (New Delhi) Mycol. Pap. No. 10: 2. 1944.

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CONTROL
2482 Reyes 1939
CULTURE ON ARTIFICIAL MEDIA
3095 Vanterpool 1932
548 Cralley 1934
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
26,27 Anderson 1899
28 Anderson 1902
402 Butler 1913
2584 Rutgers 1914
2481 Reyes 1933
2482 Reyes 1939
446 Chowdhury 1946
MISCELLANEOUS
Presence in rice feed meal 767 Filter 1911
SPORE GERMINATION AND FACTORS AFFECTING
2955 Teng 1931
3095 Vanterpool 1932
548 Cralley 1934
1688 Lin 1936
2203 Padwick and Khan 1944

NEOVOSSIA INDICA (Mitra) Mundkur Trans. Brit. Mycol. Soc. 24: 313. 1940.

Tilletia indica Mitra, Ann. App. Biol. 18: 178. 1931.

CONTROL
1963 Mitra 1935
1964 Mitra 1937
CULTURE ON ARTIFICIAL MEDIA
2402 Ramamoorthy and Mundkur 1944
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1963 Mitra 1935
1964 Mitra 1937
2200 Padwick 1939 (effect of irrigation on incidence)
2058 Mundkur 1943 (each smut ball represents a separate local infection caused by wind-borne sporidia)

MISCELLANEOUS
Technical description of species 1962 Mitra 1931
Parts of host affected 1962 Mitra 1931
Comparison of *Tilletia indica* with *T. caries* and *T. foetida* 1962 Mitra 1935
Not systemic or seed borne or soil borne but each smut ball represents a separate local infection caused by wind-borne sporidia 2058 Mundkur 1943
Comparison with *T. caries* and *T. foetida* 2058 Mundkur 1943
SPORE GERMINATION AND FACTORS AFFECTING
1963 Mitra 1935

NEOVOSSIA MOLINIAE (Thüm.) Korn. Österr. Bot. Zeitschr. 29: 217. 1879.

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CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
313 Brefeld 1888
315 Brefeld 1895
1831 Magnus 1900
MISCELLANEOUS
Symptoms and morphology 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
Morphology 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
2655 Schellenberg 1911

SCHIZONELLA COLEMANI Iyengar and Narasimhan Phytopath. 12: 435. 1922.

MISCELLANEOUS
Morphology and symptoms 1334 Iyengar and Narasimhan 1922

SCHIZONELLA MELANOGRAMMA (DC.) Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 362. 1877.

Uredo melanogramma (DC.), Fl. France 6: 75. 1815.
Caeoma melanogramma Schlecht., Linneae 1: 238. 1826.
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Urocystis pusilla Cooke and Peck, Rept. N. Y. State Mus. Nat. Hist. 25: 90. 1873.
Ustilago ambiens Karsten, Oefv. K. Svensk. Vet. Akad. Forh. 29: 108. 1873.
Geminella melanogramma Magnus, Hedwigia 14: 19. 1875.

Entyloma ambiens Johans., Oefv. K. Svensk. Vet. Akad. Forh. 41: 160. 1884.
Schizonella pusilla Cif., Ann. Mycol. 29: 20. 1931.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2698 Schröter 1877
315 Brefeld 1895
2655 Schellenberg 1911
MISCELLANEOUS
Morphology 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
Host range 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
2698 Schröter 1877
313 Brefeld 1888
315 Brefeld 1895
2655 Schellenberg 1911

SCHROETERIA DECAISNEANA (Boudier) DeToni Sacc. Syll. Fung. 7: 501. 1888.

Geminella decaisneana Boudier, Bull. Soc. Mycol. (France), 3: 150. 1887.

CYTOLOGY
760 Ferdinandsen and Winge 1914
MISCELLANEOUS
Morphology 2655 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
2698 Schröter 1877
321 Brefeld 1912

SCHROETERIA DELASTRINA (Tul.) Wint. Rabenh. Krypt. Fl. 1: 117. 1881.

Thecaphora delastrina Tul., Ann. Sci. Nat. III. 7: 7. 1847.
Geminella delastrina Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 5. 1877.
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CULTURE ON ARTIFICIAL MEDIA
312 Brefeld 1883
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3237 Winter 1876
312 Brefeld 1883
287 Boudier 1886
288 Boudier 1887
499 Cocconi 1897
3093 Vanderyst 1903
MISCELLANEOUS
Host range and morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING
3056 Tulasne and Tulasne 1847
2698 Schröter 1877
312 Brefeld 1883

SOROSPORIUM ANDROPOGONIS-SORGHI S. Ito. Trans. Sapporo Nat. Hist. Soc. 14: 79. 1935.

MISCELLANEOUS
Morphology and symptoms; technical description and Latin diagnosis. In ovaries and pedicels of sorghum 1328 Ito 1935

SOROSPORIUM ARGENTINUM Speg. Anal. Soc. Cien. Argent. 12: 64. 1881.

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Ustilago argentinum Speg., Revista Argent. Bot. 1: 151. 1926.

MISCELLANEOUS
Morphology and symptoms 1191 Hirschhorn 1939

SOROSPORIUM ARISTIDAE-CYANANTHAE (Bref.) Zundel Ustilaginales of the World

Ustilago aristidae cyananthae Bref., Unters. Gesammt. Myk. 12: 102. 1895.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

SOROSPORIUM CONSANGUINEUM Ell. and Ev. Jour. Mycol. 3: 56. 1887.

Ustilago aristidae Peck, Bull. Torr. Bot. Club 12: 35. 1885.
Sorosporium aristidae Neger, Ann. Univ. Santiago, Chile, 93: 789. 1896.
Sorosporium bornmulleri P. Magnus, Verh. Zool.-Bot. Ges. (Wien) 1900: 434.

CYTOLOGY
1211 Hirschhorn 1945

MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910

SPORE GERMINATION AND FACTORS AFFECTING
2159 Norton 1896
1763 McAlpine 1910
796 Fischer and Hirschhorn 1945

SOROSPORIUM CRYPTUM (McAlp.) Smuts of Australia, p. 176. 1910.

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LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910

MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910
SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910

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MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910

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Uredo syntherismae Ravenel (not Schweinitz), Ravenel Fung. Car. 2: 98. 1853.
Ustilago cesatii Fisch. v. Wald., Apercu Syst. Ust. p. 25. 1877. p.p.
Tolyposporium everhartii Dietel, Engl. and Prantl Nat. Pflanz. 1: 14. 1897.
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MISCELLANEOUS
Sori much smaller in staminal than in ovarial tissues 1065 Hansing and Lefebvre 1941

SOROSPORIUM MELANDRII Sydow Ann. Mycol. 32: 286. 1934.

MISCELLANEOUS
Longevity of spores; at least two years 779 Fischer 1936
SPORE GERMINATION AND FACTORS AFFECTING
3266 Woronin 1882

SOROSPORIUM NEILII G. H. Cunningham Trans. New Zeal. Inst. 55: 428. 1924.

MISCELLANEOUS
Morphology, technical description and Latin diagnosis 564 Cunningham 1924
SPORE GERMINATION AND FACTORS AFFECTING
564 Cunningham 1924

SOROSPORIUM PASPALI-THUNBERGII (P. Henn.) S. Ito Trans. Sapporo Nat. Hist. Soc. 14: 94. 1935.

Ustilago paspali-thunbergii P. Henn., Hedwigia 43: 140. 1904.
Sorosporium paspali McAlp., Smuts of Australia, p. 180. 1910.

CONTROL
2622 Sattar 1930
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2622 Sattar 1930
SPORE GERMINATION AND FACTORS AFFECTING
2622 Sattar 1930

SOROSPORIUM PILULIFORMIS (Berk.) McAlpine Smuts of Australia, p. 180. 1910.

Uredo piluliformis Berk., Hooker's Jour. Bot. (London) 2: 423. 1843.
Ustilago piluliformis Tul., Ann. Sci. Nat. Bot. III. 7: 93. 1847.

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Ustilago mulleriana Thüm., Mycoth. Univ. 623. 1877.
Cintractia piluliformis P. Henn., Hedwigia 27: 37. 1898.
Cintractia muelleriana Cif., Ann. Mycol. 29: 72. 1931.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910
MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910

SOROSPORIUM SAPONARIAE F. Rudolphi Linnaea 4: 116. 1829.

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Ustilago rudolphi Tulasne, Ann. Sci. Nat. III. 7: 99. 1847.
Microbotryum rudolphi Leveille, Diet. Univ. Hist. Nat. 12: 787. 1849.
Thecaphora tunicae Auderswald, Österr. Bot. Zeitschr. 18: 242. 1868.
Urocystis purpurea Hazslinsky, Math. Termes. Magyar. Akad. 14: 82. 1876.
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Sorosporium gypsophilae Cif., Ann. Mycol. 26: 25. 1928.
Sorosporium silenis-inflatae Cif., Ann. Mycol. 26: 26. 1928.
Sorosporium alsinearum Cif., Ann. Mycol. 26: 27. 1928.
Sorosporium purpureum Liro, Ann. Acad. Sci. Fenn. A. 42: 63. 1938.
Sorosporium stellariae Liro, Ann. Acad. Sci. Fenn. A. 42: 62. 1938.
Sorosporium dianthi-superbi Liro, Ann. Sci. Fenn. A. 42: 65. 1938.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3056 Tulasne 1847
615 DeBary 1863
803 Fischer v. Waldheim 1869
2297 Phillips and Plowright 1881
3266 Woronin 1882
2389 Plowright 1889
2655 Schellenberg 1911
1689 Lind 1913
1724 Liro 1938
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Incidence in Oregon on *Silene* and *Stellaria* 1338 Jackson 1920
Host range 1724 Liro 1938
PHYSIOLOGIC SPECIALIZATION
1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
3266 Woronin 1882
315 Brefeld 1895
2655 Schellenberg 1911
1689 Lind 1913

SOROSPORIUM SETARIAE McAlp. Smuts of Australia, p. 183. 1910.
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910

MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910
SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910

SOROSPORIUM SIMII Pole Evans So. Afr. Jour. Sci. 12: 543. 1916.
MISCELLANEOUS
Distinct from *S. reilianum* 3342 Zundel 1930

SOROSPORIUM SOLIDUM (Berk.) McAlp. Smuts of Australia, p. 183. 1910.
Ustilago solida Berk., Fl. Tasmania 2: 270. 1860. (In Hooker, Bot. Antarctic Voyage 3: 2. 1860).
Urocystis solida Fisch. v. Waldh., Apercu Syst. Ust. p. 38. 1877.
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910

SOROSPORIUM SYNTHERISMAE (Peck) Farl. Farlow and Seymour Host Index, N. A. Fungi 152. 1891.
Ustilago syntherismae Peck, Ann. Rept. N. Y. State Museum 27: 103. 1875.
Sorosporium cenchri P. Henn., Hedwigia 35: 221. 1896.
CULTURE ON ARTIFICIAL MEDIA
1871 Martin and Kernkamp 1941
1870 Martin 1943
CYTOLOGY
1870 Martin 1943
HYBRIDIZATION AND GENETICS
1870 Martin 1943 (with *Sphacelotheca destruens*)
MISCELLANEOUS
Longevity of spores; at least 7 years 779 Fischer 1936
Effect of incubation temperatures on percentage of smut 1384 Johnson, Rodenhiser and Lefebvre 1940
Buff mutant produced 1385 Johnson, Rodenhiser and Lefebvre 1940
SPORE GERMINATION AND FACTORS AFFECTING
2159 Norton 1896
1517 Kolk 1943
1870 Martin 1943
796 Fischer and Hirschhorn 1945

SOROSPORIUM TUMEFACIENS McAlp. Smuts of Australia, p. 184. 1910.
MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910
SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910

SPHACELOTHECA ANDROPOGONIS-ANNULATI (Bref.) Zundel Mycologia 22: 132. 1930.
Ustilago andropogonis-annulati Bref , Unters. Gesammt. Myk. 12: 109. 1895.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895
MISCELLANEOUS
Morphology 315 Brefeld 1895
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

SPHACELOTHECA ARUNDINELLAE (Bref.) Mundkur Trans. Brit. Mycol. Soc. 23: 113. 1939.

Ustilago arundinellae Bref., Unters. Gesammt. Myk. 12: 108. 1895.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895
MISCELLANEOUS
Morphology 315 Brefeld 1895
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

SPHACELOTHECA BARCINONENSIS Riofrio Bol. Real. Soc. Esp. Hist. Nat. 23: 192–195. 1923.

MISCELLANEOUS
Morphology and symptoms 2503 Riofrio 1923
SPORE GERMINATION AND FACTORS AFFECTING
2503 Riofrio 1923

SPHACELOTHECA BICORNIS (P. Henn.) Zundel Mycologia 22: 140. 1930.

Ustilago bicornis P. Henn., Hedwigia 35: 50. 1896.

SPORE GERMINATION AND FACTORS AFFECTING
3118 Viegas 1944

SPHACELOTHECA BOREALIS (Clint.) Schellenb. Ann. Mycol. 5: 386. 1907.

Sphacelotheca hydropiperis var. *borealis* Clint., Proc. Boston Nat. Hist. 31: 395. 1904.

MISCELLANEOUS
Morphology and symptoms 2654 Schellenberg 1907
Morphology and symptoms 2655 Schellenberg 1911
SPORE GERMINATION AND FACTORS AFFECTING
2654 Schellenberg 1907
2655 Schellenberg 1911

SPHACELOTHECA BOSNIACA (Beck) Maire Bull. Soc. Bot. France Ser. IV. 8: 150. 1908.

Uredo bistortarum ustilaginea DC., Fl. France 6: 76. 1815.
Ustilago bosniaca Beck, Ann. k.k. Nat. Hofmus. (Wien) 9: 121. 1894.
Sphacelotheca alpina Schellenb., Ann. Mycol. 5: 392. 1907.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
174 Beck 1894
2872 Strohmeyer 1896
2654 Schellenberg 1907 (as *S. alpina*)
2655 Schellenberg 1911 (as *S. polygoni-alpini* and *S. alpina*)
1720 Liro 1924

MISCELLANEOUS
Symptoms and morphology as *S. alpina* 2654 Schellenberg 1907
Symptoms and morphology as *S. alpina* 2655 Schellenberg 1911
History and comparative morphology with related forms 1720 Liro 1924
Synonymy 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
2655 Schellenberg 1911 (as *S. alpina*)

SPHACELOTHECA CRUENTA (Kühn) Potter Phytopath. 2: 98. 1912.

Ustilago cruenta Kühn, Hamburg Gart. Blumenztg. 28: 178. 1872.
Ustilago tulasnei Kühn, Rabenh., Fungi Europ. 1997. 1875.

CONTROL
277 Borghardt 1932
2910 Takasugi and Akaishi 1933
1669 Leukel 1943

CULTURE ON ARTIFICIAL MEDIA
312 Brefeld 1883
314 Brefeld 1895
2515 Rodenhiser 1932
2517 Rodenhiser 1934
2745 Shih 1938

CYTOLOGY
2517 Rodenhiser 1934

HETEROTHALLISM AND SEX
311 Brefeld 1883 (sporidial fusions)
2515 Rodenhiser 1932
2519 Rodenhiser and Barnes 1933
2517 Rodenhiser 1934
2745 Shih 1938

HOST RANGE
1397 Johnston *et al.* 1938 (on Johnson grass, *Sorghum halepense*)

HYBRIDIZATION AND GENETICS
2516 Rodenhiser 1933 (with *Sphacelotheca sorghi*)
2519 Rodenhiser and Barnes 1933
2517 Rodenhiser 1934 (with *Sphacelotheca sorghi*)
3081 Vaheeduddin 1936 (with *Sphacelotheca reiliana*)
2518 Rodenhiser 1937 (with *Sphacelotheca sorghi*)
3082 Vaheeduddin 1938 (with *Sphacelotheca reiliana*)
3083 Vaheeduddin 1942 (with *Sphacelotheca reiliana*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

311 Brefeld 1883
313 Brefeld 1888
314 Brefeld 1895
322 Brefeld and Falk 1905
2453 Reed and Faris 1924
2454 Reed and Faris 1924
732 Faris and Reed 1925
1868 Martin and Ratliffe 1927
2911 Takasugi and Akaishi 1937
2745 Shih 1938

MISCELLANEOUS

Comparison with other Sorghum smuts 1576 Kühn 1878
Infection of host by injecting sporidial suspensions 313 Brefeld 1888
Effect on host as compared with *S. sorghi* 2424 Reed 1923
Local infection of floral structures 732 Faris and Reed 1925
Second crop of Feterita smutted where none appeared in first crop 1868 Martin and Ratliffe 1927
Successful inoculation by hypodermic injection 3318 Zehner and Humphrey 1929
Spores not toxic to rodents, cattle and fowl 1135 Heller *et al.* 1930
Genetic data in support of specific distinction of *S. cruenta* from *S. sorghi* 2517 Rodenhiser 1934
Comparison with *S. holci* 1397 Johnston *et al.* 1938
As cause of hay fever and asthma 3246 Wittich 1939
Incidence in Italian E. Africa on sorghum 425 Castellani 1940
Severity in Nebraska 574 Cushing *et al.* 1940
Hay fever produced by 2296 Phillips 1940
Sori in both staminal and ovarial tissues 1065 Hansing and Lefebvre 1941

PHYSIOLOGIC SPECIALIZATION

1907 Melchers 1933
2518 Rodenhiser 1937 (distinct race on Johnson grass)

SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883
403 Butler 1918
1586 Kulkarni 1918
2910 Takasugi and Akaishi 1933
2517 Rodenhiser 1934
2911 Takasugi and Akaishi 1937
2745 Shih 1938
1517 Kolk 1943

VARIETAL RESISTANCE AND SUSCEPTIBILITY AND INHERITANCE

1587 Kulkarni 1921
2424 Reed 1923
1591 Kulkarni 1924

2444 Reed 1936
2911 Takasugi and Akaishi 1937
1909 Melchers 1940

SPHACELOTHECA CYMBOPOGONIS Yen Rev. Mycol. 3: 7. 1938.

CYTOLOGY
3281 Yen 1938

MISCELLANEOUS
Morphology and symptoms 3281 Yen 1938

SPORE GERMINATION AND FACTORS AFFECTING
3281 Yen 1938

SPHACELOTHECA DESTRUENS (Schlecht.) Stevenson and Johnson Phytopath. 34: 613. 1944.

Uredo (*Ustilago*) *segetum* subsp. *panici-miliacei* Pers., Syn. Fung. 224. 1801.
Uredo (*Ustilago*) *segetum* var. *panici* Albertini and Schwein., Consp. Fung. 130. 1805.
Uredo carbo var. *panici-miliacei* DC., Fl. France 6: 76. 1815.
Caeoma destruens Schlecht., Fl. Berol. 2: 130. 1824. Link, in Willdenow Sp. Pl. 6: 3. 1824.
Uredo destruens Duby, Bot. Gall. 901. 1830.
Erysibe panicorum var. *panici-miliacei* Wallr., Fl. Krypt. Germ. 2: 216. 1833.
Ustilago carbo var. *destruens* Tul., Ann. Sci. Nat. III. 7: 81. 1847.
Tilletia destruens Lev., Ann. Sci. Nat. III. 8: 372. 1848.
Ustilago destruens Schlecht., Rabenh. in Klotsch, Herb. Viv. Mycol. ed. 2. 400. 1856.
Ustilago panici-miliacei Wint., in Rabenh. Krypt. Fl. 1: 89. 1884.
Sorosporium panici-miliacei Tok., Bot. Mag. (Tokyo) 16: 184, 247. 1902.
Sphacelotheca panici-miliaceae Bubak, Houby Ceska 2: 27. 1912.

CONTROL
1269 Hori 1901
2877 Stuart 1901
2909 Takahashi 1902
3097 Vasey 1918
1598 Kutin 1921
2816 Stakman and Lambert 1923
2751 Sigriansky 1925
1007 Gussow and Conners 1927
3273 Yatzynina 1927
22 Alexeyeff 1928 (effect of high temperatures on spore viability and germination)
276 Borghardt 1928
278 Borghardt 1932
1514 Köck 1932
1657 Leszczenko 1935
2256 Perevesentzeva 1935 (use of magnesium arsenite)
2588 Ryakhovsky 1935
2589 Ryakhovsky and Gamarnik 1935
2486 Richter and Müller 1943

CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883 (as *U. panici-miliacei*)
1871 Martin and Kernkamp 1941
1870 Martin 1943

CYTOLOGY
1870 Martin 1943

HETEROTHALLISM AND SEX
311 Brefeld 1883 (fusions between cells of promycelium)
159 Bauch 1934 (sporidial fusions with bipolar species)

HYBRIDIZATION AND GENETICS
159 Bauch 1934
1870 Martin 1943 (with *Sorosporium syntherismae*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883 (as *U. panici-miliacei*)
322 Brefeld and Falk 1905
1271 Hori 1907
1763 McAlpine 1910
3097 Vasey 1918
2163 Novopokrovski and Skaskin 1925
22 Alexeyeff 1928
1409 Jones and El Nasr 1938

MISCELLANEOUS
Eight-year-old herbarium material still viable (as *U. panici-miliacei*) 311 Brefeld 1883
Symptoms and morphology 1763 McAlpine 1910
Morphology and symptoms 2655 Schellenberg 1911
Spores disseminated by beetle (*Phalacrus politus*) 3097 Vasey 1918
Heavy losses due to in Russia 2751 Sigriansky 1925
Effect of smut on development of the host 388 Buchheim and Schmanev 1926
Control reduced considerably when treated seed is stored for any length of time before planting 3273 Yatzynina 1927
Heavy infestation responsible for difficult breathing of peasants during threshing 129 Balakhenoff 1928
Influence on development of host 385 Buchheim 1930
Morphological responses of the host to infection 385 Buchheim 1930
Stimulatory effects of ether 704 Enomoto 1934
Influence on development of host 386 Buchheim 1935
Fresh spores germinate less freely 1737 Lobik and Dahlstrem 1936
First report in Sweden 1705 Lindfors 1939
Symptoms and review of literature 2486 Richter and Müller 1943
S. destruens the valid name for the broomcorn millet fungus 2850 Stevenson and Johnson 1944

SPORE GERMINATION AND FACTORS AFFECTING
311 Brefeld 1883 (as *U. panici-miliacei*)
2163 Novopokrovsky and Skaskin 1925
22 Alexeyeff 1928
1737 Lobik and Dahlstrem 1936 (temperature range for germination)
1737 Lobik and Dahlstrem 1936 (methods of)
3279 Yen 1937
1870 Martin 1943
796 Fischer and Hirschhorn 1945

SPHACELOTHECA DIGITARIAE (Kunze) Clint. N. A. Flora 7: 998. 1939.

Uredo digitariae Kunze, Holl. Flora 13: 369. 1830.
Ustilago digitariae f. *panici-repentis* Kühn, Hedwigia 15: 5. 1876. (Rabenh. Fungi Europ. 2099, f. 11).
Ustilago pallida Körn., Hedwigia 16: 34. 1877.
Ustilago digitariae Wint., Rabenh. Krypt. Fl. 1: 88. 1881.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Changed to *Sorosporium digitariae* n. comb. 2201 Padwick 1946

SPHACELOTHECA EXSERTA (McAlp.) Cif. Ann. Mycol. 26: 32. 1928 (nom. nud.)

Cintractia exserta McAlp., Smuts of Australia, p. 170. 1910.
Sphacelotheca exserta Yen, Contr. Inst. Bot. Nat. Acad. Peiping 4: 196. 1936.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910

MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910

SPHACELOTHECA HOLCI Jackson Monogr. Univ. Puerto Rico. B. No. 2: 259. 1934.

SPORE GERMINATION AND FACTORS AFFECTING
1517 Kolk 1943

SPHACELOTHECA HYDROPIPERIS (Schum.) DeBary.

Uredo hydropiperis Schum., enum. Pl. Saell. 2: 234. 1804.
Uredo bistortarum ustilaginea DC., Fl. France 6: 76. 1815. p.p.
Caeoma utriculosum Link, in Willdenow, Sp. Pl. 6: 9. 1825. p.p.
Erysibe utriculosa Wallr., Fl. Krypt. Germ. 2: 216. 1833.
Ustilago candollei Tul., Ann. Sci. Nat. Bot. III. 7: 187. 1884.
Sphacelotheca granosa Liro, Ann. Acad. Sci. Fenn. A. 17: 148. 1924.

HETEROTHALLISM AND SEX
315 Brefeld 1895 (fusion of sporidia)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
619 DeBary 1884
2654 Schellenberg 1907 (as *U. candollei*)
1720 Liro 1924

MISCELLANEOUS
Morphology 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
History and morphology 1720 Liro 1924
Host range 1720 Liro 1924
PHYSIOLOGIC SPECIALIZATION
1720 Liro 1924
SPORE GERMINATION AND FACTORS AFFECTING
803 Fischer v. Waldheim 1869
2704 Schröter 1887
2559 Rostrup 1890
315 Brefeld 1895
2654 Schellenberg 1907 (as *U. candollei*)
2655 Schellenberg 1911 (as *U. candollei*)

SPHACELOTHECA HYDROPIPERIS var. COLUMELLIFERA (Tul.) Zundel. Ustilaginales of the World.

Ustilago hydropiperis var. *columellifera* Tul., Berk., in Jour. Linn. Soc. (London), 13: 174. 1873. Cooke, Handbook Australian Fungi 237. 1892.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910

SPHACELOTHECA INFLORESCENTIAE (Trel.) Maire Österr. Bot. Zeitschr. 57: 273. Oct. 1907.

Uredo bistortarum ustilagineae DC. p.p., Fl. France 6: 76. 1815.
Ustilago bistortarum var. *inflorescentiae* Trel., Harriman Alaska Exp. Crypt. 35. 1904.
Ustilago inflorescentiae Maire, Bull. Soc. Bot. (France). 54: 149. 1907.
Sphacelotheca polygoni-vivipari Schellenb., Ann. Mycol. 5: 388. Oct. 1907. (Appeared Nov. 1907).
Sphacelotheca inflorescentiae Jaap, Ann. Mycol. 6: 194. 1908.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2654 Schellenberg 1907 (as *S. polygoni-vivipari*)
1935 Migula 1910
3225 Wilson 1924
1720 Liro 1924
MISCELLANEOUS
Morphology and symptoms 2654 Schellenberg 1907
Comparative morphology with *S. borealis* and *S. hydropiperis* 2654 Schellenberg 1907
History and morphology (as *U. ustilagineae*) 1720 Liro 1924
Comparative morphology with *S. borealis* and *S. hydropiperis* 3225 Wilson 1924
Considered as synonym of *Ustilago bistortarum* 1213 Hirschhorn 1947
PHYSIOLOGIC SPECIALIZATION
2655 Schellenberg 1911 (as *S. polygoni-vivipari*)

SPORE GERMINATION AND FACTORS AFFECTING
2654 Schellenberg 1907 (as *S. polygoni-vivipari*)
2655 Schellenberg 1911 (as *S. polygoni-vivipari*)

SPHACELOTHECA ISCHAEMI (Fuck.) Clint. Jour. Mycol. 8: 140. 1902.

Uredo (*Ustilago*) *andropogoni* Opiz, Naturw. 1823–24: 43. 1823. (doubtful description).
Ustilago ischaemi Fuck., Ver. Nat. Nassau. 15: 22. 1861.
Ustilago cylindrica Peck, Bot. Gaz. 7: 55. 1882.
Cintractia ischaemi H. and P. Sydow, Österr. Bot. Zeitschr. 51: 12. 1901.
Sphacelotheca andropogonis Bubak, Naturw. Landes. Böhm. 15: 25. 1916.
Sphacelotheca ischaemi f. *heteropogonis* Bacc., Ann. Bot. (France) 14: 131. 1917.

CULTURE ON ARTIFICIAL MEDIA
286 Boss 1927
CYTOLOGY
286 Boss 1927
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
647 Dietel 1897
2655 Schellenberg 1911
MISCELLANEOUS
Morphology 311 Brefeld 1883
Morphology and symptoms 2655 Schellenberg 1911
Chlamydospores (haploid) in culture 286 Boss 1927
SPORE GERMINATION AND FACTORS AFFECTING
311 Brefeld 1883
3282 Yen 1938

SPHACELOTHECA MICROSPORA (P. Henn.) Cif. Bot. Archiv. 34: 532. 1932.

Ustilago microspora Schröt. and Henn., Hedwigia 35: 215. 1895.
Ustilago paspali Speg., Ann. Mus. Nac. Buenos Aires 6: 209. 1898.
Ustilago paspali-notati P. Henn., in Herb. Holway, see Jour. Mycol. 8: 140. 1902.
Sphacelotheca paspali-notati Clint., Jour. Mycol. 8: 140. 1902.

MISCELLANEOUS
Comparative morphology on various hosts and localities 1191 Hirschhorn 1939

SPHACELOTHECA MÖLLERI (Bref.) Liro Ann. Acad. Sci. Fenn. 17: 158. 1924.

Ustilago mölleri Bref., Unters. Gesammt. Myk. 12: 132. 1895.

MISCELLANEOUS
Morphology and description 315 Brefeld 1895
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

SPHACELOTHECA MONTANIENSIS (Ell. and Holw.) Clint. Jour. Mycol. 8: 141. 1902.

Ustilago montaniensis Ell. and Holw., Jour. Mycol. 6: 119. 1891.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
29 Anderson 1889

MISCELLANEOUS
Importance on *Muhlenbergia* spp. in Montana 29 Anderson 1889
Adverse effects on hosts 29 Anderson 1889

SPHACELOTHECA PAMPARUM (Speg.) Clint Jour. Mycol. 8: 140. 1902.

Ustilago setariae Speg., Ann. Soc. Cien. Argent. 10: 5. 1880. Not *U. setariae Niessl.*
Ustilago pamparum Speg., Ann. Soc. Cien. Argent. 17: 89. 1884.
Ustilago kolaczekii Kühn, Rabenh.-Wint. Fungi Europ. 3401. 1886.

MISCELLANEOUS
Nomenclatorial note and synonomy 472 Ciferri 1934

SPORE GERMINATION AND FACTORS AFFECTING
1191 Hirschhorn 1939

SPHACELOTHECA PAPPOPHORI (Pat.) Zundel Ustilaginales of the World.

Ustilago pappophori Pat., Bull. Soc. Mycol. (France) 22: 199. 1906.
Ustilago pappophori Pat., var. *magdalensis* Hirschh., Darwiniana 3: 397. 1934.
Ustilago magdalensis Hirschh., Ann. Soc. Cien. Argent. 83: 217. 1942.

SPORE GERMINATION AND FACTORS AFFECTING
1191 Hirschhorn 1939

SPHACELOTHECA REILIANA (Kühn) Clint. Jour. Mycol. 8: 141. 1902.

Ustilago holci-sorghi Riv., Parassiti veg. 422. 1873. (sub. *U. holci-sorghi*) (nomen dubium).
Ustilago reiliana Kühn, in Rabenh., Fungi Europ. 1998. 1875.
Ustilago reiliana f. *zeae* Pass., in Rabenh., Fungi Europ. 2096. 1876.
Ustilago pulveracea Cooke, Grevillea 4: 115. 1876.
Cintractia sorghi DeToni, Sacc. Syll. Fung. 7: 48. 1888.
Endothlaspis sorghi Sorokine, Rev. Mycol. 12: 4. 1890.
Ustilago abortifera Speg., Ann. Mus. Nac. Buenos Aires II. 6: 207. 1899.
Cintractia reiliana Clint., Ill. Agric. Expt. Sta. Bull. 57: 346. 1900.
Ustilago (Cintractia) reiliana f. *foliicola* Kell., Ohio (State Univ.) Nat. 1: 9. 1900.
Sorosporium reilianum McAlp., Smuts of Australia, 181. 1910.
Sphacelotheca sorghi Speg., Rivista Arg. Bot. 1: 150. 1925.
Spacelotheca sorokiniana Cif., Ann. Mycol. 26: 2. 1928.
Sphacelotheca holci-sorghi Cif., Fl. Ital. Crypt. Fasc. 17: 267. 1938.

CONTROL
1761 McAlpine 1910
2068 Munerati 1910
1901 Melchers 1916
360 Britton-Jones 1922

3169 Wallace 1931
277, 278 Borghardt 1932
337 Bressman and Barss 1933

CULTURE ON ARTIFICIAL MEDIA

2349 Potter 1914 (including production of chlamydospores in culture)
1214 Hirschhorn and Hirschhorn 1935 (including development of chlamydospores)

CYTOLOGY

1039, 1040 Hanna 1929

HETEROTHALLISM AND SEX

1039, 1040 Hanna 1929

HYBRIDIZATION AND GENETICS

3065 Tyler and Shumway 1935 (with *Sphacelotheca sorghi*)
3081 Vaheeduddin 1936 (with *Sphacelotheca cruenta*)
3083 Vaheeduddin 1942 (with *Sphacelotheca cruenta*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2242 Passerini 1877
311 Brefeld 1883
479 Clinton 1900
1442, 1443 Kellerman 1900
1444 Kellerman and Jennings 1902
2021 Mottareale 1903
1271 Hori 1907
1761 McAlpine 1910
2348 Potter 1912
2349 Potter 1914
360 Britton-Jones 1922
451 Christensen 1926
935, 936 Geschele 1927
2463 Reed, Swabey and Kolk 1927
1039, 1040 Hanna 1929
337 Bressman and Barss 1933
1486 Kispatic 1948

MISCELLANEOUS

Comparison with other Sorghum smuts 1576 Kühn 1878
Spores still viable after 8 years 311 Brefeld 1883
Dry sporidia viable after several months 311 Brefeld 1883
Incidence and importance in S. Africa 2067 Mundy 1910
Incidence and importance in S. Africa 719 Evans 1911
Incidence in California 1783 Mackie 1920
Biological peculiarities 936 Geschele 1927
Smutty sorghum grain non-toxic to chickens, cattle and horses 1135 Heller *et al.* 1930
Prevalent and severe in Soviet Russia 277 Borghardt 1932
Abnormal vegetative proliferation of the ears of infected plants 337 Bressman and Barss 1933

Incidence in Oregon 337 Bressman and Barss 1933
Influence on development of host 386 Buchheim 1935
Longevity of spores; 2 years in herbarium material 779 Fischer 1936
Serological differentiation from related species 172 Beck 1938
Suspected as contributing to corn smut poisoning of children in Yugoslavia 1891 Mayerhofer and Dragisic 1938
Incidence in Italian E. Africa 425 Castellani 1940
Severity in Nebraska 574 Cushing *et al.* 1940
Introduction into Yugoslavia 1486 Kispatic 1948

PHYSIOLOGIC SPECIALIZATION

2463 Reed, Swabey and Kolk 1927 (smut on corn and sorghum considered distinct although they will cross-infect to some extent)
337 Bressman and Barss 1933 (smut from corn would not infect sorghum)
1486 Kispatic 1948

SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883
2159 Norton 1896
1763 McAlpine 1910
360 Britton-Jones 1922
3282 Yen 1938

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

337 Bressman and Barss 1933

SPHACELOTHECA ROTTBOELLIAE (Sydow and Butler) Mundkur Trans. Brit. Mycol. Soc. 23: 111. 1939.

Ustilago rottboelliae Sydow and Butler, Ann. Mycol. 5: 486. 1907.
Cintractia densa McAlp., Smuts of Australia, p. 168. 1910.
Ustilago rottboelliae Miyake, Bot. Mag. (Tokyo) 27: 42. 1913.
Sphacelotheca densa Cif., Ann. Mycol. 26: 32. 1928.

SPORE GERMINATION AND FACTORS AFFECTING

1209 Hirschhorn 1943

SPHACELOTHECA SACCHARI (Rabenh.) Cif. Fl. Ital. Crypt. Fasc. 17: 262. 1938.

Ustilago sacchari Rabenh., Sitzungsber. Nat. Ges. Isis (Dresden) 1870: 227. 1871.
Ustilago sacchari-ciliaris Bref., Unters, Gesammt. Myk. 12: 109. 1895.

MISCELLANEOUS

Probably synonymous with *Cintractia pulverulenta* Cooke and Masse 2897 Sydow 1924
Comparison with other smuts on *Saccharum* and *Erianthus* 2897 Sydow 1924
Comparison with other sugar cane smuts 1198 Hirschhorn 1941
Identical with *U. sacchari-ciliaris* Bref. Both should be called *Sphac. sacchari* 2056 Mundkur 1942

SPHACELOTHECA SCHWEINFURTHIANA (Thüm.) Sacc. Ann. Mycol. 6: 554. 1908.

Ustilago schweinfurthiana Thüm., Mycoth. Univ. 726. 1877.

CULTURE ON SYNTHETIC MEDIA
315 Brefeld 1895
157 Bauch 1932
3278 Yen 1937

HETEROTHALLISM AND SEX
157 Bauch 1932
159 Bauch 1934

HYBRIDIZATION AND GENETICS
159 Bauch 1934 (sporidial fusions with bipolar species)

MISCELLANEOUS
Morphology 315 Brefeld 1895
First report on *Saccharum* (*S. munja*) 1458 Khanna and Ramnathan 1946
Effect on host 1458 Khanna and Ramnathan 1946

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
157 Bauch 1932

SPHACELOTHECA SORGHASTRI Zundel Phytopath. 32: 544. 1942.

MISCELLANEOUS
Technical description, Latin diagnosis, and brief account of distribution 1881 Massey and Zundel 1942

SPHACELOTHECA SORGHI (Link) Clint. Jour. Mycol. 8: 140. 1892.

Sporisorium sorghi Link, in Willdenow, Sp. Pl. 6: 86. 1825.
Tilletia sorghi-vulgaris Tul., Ann. Sci. Nat. III, 7: 116. 1847.
Ustilago sorghi Pass., Thüm., Hedwigia 12: 114. 1873.
Cintractia sorghi-vulgaris Clint., Bull. Ill. Agric. Expt. Sta. 47: 404. 1897.
Sphacelotheca sorghi-saccharati Siemaszko, In Herb. Caucasus 1918.

CONTROL
479 Clinton 1900
1117, 1118 Hecke 1902
1119 Hecke 1903
3043 Trzebinski 1906
2508 Roberts and Freeman 1907
720 Evans 1914
1901 Melchers 1916
360 Britton-Jones 1922
2816 Stakman and Lambert 1923
2984 Thompson 1923
1398 Johnston and Melchers 1924
1915 Melchers and Walker 1924

1903 Melchers 1925
824 Flor 1927
1426 Kamat 1927
1914 Melchers and Johnston 1927
1399 Johnston and Melchers 1928
3075 Uppal and Desai 1931
3169 Wallace 1931
277 Borghardt 1932
696 El-Helaly 1939
1672, 1673 Leukel and Nelson 1939
1410, 1411 Jones and ElNasr 1940
2019 Morwood 1941
1770 McDougal 1941
3083 Vaheeduddin 1942
390 Buchholtz 1943
1669 Leukel 1943
1066 Hansing and Melchers 1944
1592 Kulkarni 1944
1671 Leukel and Livingston 1945
105 Asthana 1947
2020 Morwood 1947

CULTURE ON ARTIFICIAL MEDIA

765 Ficke and Johnston 1930
2515 Rodenhiser 1932
2517 Rodenhiser 1934
1324 Isenbeck 1935
3063 Tyler 1938

CYTOLOGY

2515 Rodenhiser 1934
3063 Tyler 1938

HETEROTHALLISM AND SEX

2515 Rodenhiser 1932
2519 Rodenhiser and Barnes 1933
2515 Rodenhiser 1934
3062 Tyler 1934
1324 Isenbeck 1935
3063 Tyler 1938
3282 Yen 1938 (sporidial fusions)
3083 Vaheeduddin 1942

HYBRIDIZATION AND GENETICS

2515 Rodenhiser 1932
2516 Rodenhiser 1933 (with *Sphacelotheca cruenta*)
2519 Rodenhiser and Barnes 1933 (with *Sphacelotheca cruenta*)
2517 Rodenhiser 1934 (with *Sphacelotheca cruenta*)
3065 Tyler and Shumway 1935 (with *Sorosporium reilianum*)
3081 Vaheeduddin 1936 (with *Sphacelotheca cruenta*)
2518 Rodenhiser 1937 (with *Sphacelotheca cruenta*)

3063 Tyler 1938 (intraspecific)
3082 Vaheeduddin 1938 (intraspecific)
1630 Laskaris 1939 (intraspecific)
1631 Laskaris 1941 (intraspecific)
3083 Vaheeduddin 1942 (intraspecific crosses)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1574 Kühn 1877
2372 Prillieux 1895
647 Dietel 1897
479 Clinton 1900
401 Busse 1904
322 Brefeld and Falk 1905
1763 McAlpine 1910
2348 Potter 1912
1586 Kulkarni 1918
360 Britton-Jones 1922
1590 Kulkarni 1922
2453, 2454 Reed and Faris 1924
1906 Melchers 1933
1324 Isenbeck 1935
595 Davis 1938
1913 Melchers and Hansing 1938
696 El-Helaly 1939
959, 960 Goidanich and Scardovi 1946

MISCELLANEOUS

Comparisons with other sorghum smuts 1576 Kühn 1878
Spores in herbarium material 6½ years old still viable 1678 von Liebenberg 1879
Variable symptomology according to host variety 401 Busse 1904
Infected broom corn almost worthless for making brooms 1763 McAlpine 1910
Symptoms and importance 1763 McAlpine 1910
On kaffir corn in S. Africa 720 Evans 1914
Spore longevity six years or more 360 Britton-Jones 1922
Comparison with *S. cruenta* re macromorphology 2424 Reed 1923
Comparison with *S. cruenta* re macromorphology 2453 Reed and Faris 1924
Influence of temperature, moisture and soil pH on infection 2453 Reed and Faris 1924
Incidence of on *Andropogon sorghum* in Australia 421 Carne 1927
Effect of digestive processes on spore viability 766 Ficke and Melchers 1929
Spores non-toxic to horses 766 Ficke and Melchers 1929
Spores non-toxic to rodents, cattle and fowl 1135 Heller *et al.* 1930
Comparative morphology of 5 physiologic forms 1912 Melchers *et al.* 1932

Comparative morphology of physiologic races 1912 Melchers, Ficke and Johnston 1932
Belated development 1906 Melchers 1933
Origin of new races through intra- and interspecific hybridization with *S. cruenta* 2517 Rodenhiser 1934
Genetic data supporting specific identity of *S. sorghi* from *S. cruenta* 2517 Rodenhiser 1934
Spores very finely warty, not smooth 3275 Yen 1934
Viability of spores, at least 13 years 779 Fischer 1936
High incidence in Kansas 1647 Lefebvre and Johnston 1937
Atypical symptoms resembling *S. reiliana* 1647 Lefebvre and Johnson 1937
Cases of respiratory allergy 3248 Wittich and Stakman 1937
Seriological differentiation from closely related species 172 Beck 1938
New physiologic race by intraspecific hybridization 3082 Vaheeduddin 1938
Transferred to genus *Cintractia* 1192 Hirschhorn 1939
As cause of hay fever and asthma 3246 Wittich 1939
Lysis in intraspecific crosses 1630 Laskaris 1939
Incidence in Italian E. Africa on sorghum 425 Castellani 1940
Severity in Nebraska 574 Cushing *et al.* 1940
Sori in both staminal and ovarial tissues 1065 Hansing and Lefebvre 1941
A heritable lysis in intraspecific crosses 1631 Laskaris 1941
Incidence on sorghum in Nandi Hills 2976 Thirumalachar, Swamy and Basheer 1943
Severity in Italy 959, 960 Goidanich and Scardovi 1946

PHYSIOLOGIC SPECIALIZATION

3015 Tisdale, Melchers and Clemmer 1926
3016 Tisdale, Melchers and Clemmer 1927
765 Ficke and Johnston 1930
1911 Melchers *et al.* 1930
1912 Melchers *et al.* 1932
1912 Melchers *et al.* 1932 (comparative morphology of physiologic races)
3082 Vaheeduddin 1938
3083 Vaheeduddin 1942

SPORE GERMINATION AND FACTORS AFFECTING

1678 von Liebenberg 1879
315 Brefeld 1895
2372 Prillieux 1895
478 Clinton 1897
2159 Norton 1898
479 Clinton 1900
1763 McAlpine 1910
403 Butler 1918

1586 Kulkarni 1918
360 Britton-Jones 1922
1590 Kulkarni 1922
2517 Rodenhiser 1934
3063 Tyler 1938
3282 Yen 1938
1517 Kolk 1943

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF
479 Clinton 1900
853 Freeman and Umberger 1908
2354 Potter and Melchers 1918
1587 Kulkarni 1921
2424 Reed 1923
1591 Kulkarni 1924
2456 Reed and Melchers 1925
3015 Tisdale, Melchers and Clemmer 1926
3016 Tisdale, Melchers and Clemmer 1927
2894 Swanson and Parker 1931
2444 Reed 1936
1860, 1861 Marcy 1937
1909 Melchers 1940
959, 960 Goidanich and Scardovi 1946

SPHACELOTHECA STRANGULANS (Issat.) Clint. Proc. Bost. Soc. Nat. Hist. 31: 392. 1904.

Ustilago strangulans Issatschenko, Scripta Bot. Hort. Univ. Petrop. 5: 225. 1896.

MISCELLANEOUS
Every plant of approximately one acre stand of *Eragrostis neomexicana* infected 994 Griffiths 1904

SPHACELOTHECA VALESIACA Schellenb. Beitr. Krypt. Schweiz 3: 61. 1911.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

SPHACELOTHECA VIEGASIANA Zundel Mycologia 31: 588. 1931.

SPORE GERMINATION AND FACTORS AFFECTING
3118 Viegas 1944

THECAPHORA ATERRIMA Tul. Ann. Sci. Nat. Bot. III. 7: 110. 1847.

Sorosporium atrum Peck, Bot. Gaz. 5: 35. 1880.
Tolyposporium aterrimum Dietel, in Engler and Prantl, Nat. Pflanz. 1: (1) 14. 1897.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
497 Cocconi 1890
2655 Schellenberg 1911

1689 Lind 1913
1724 Liro 1938

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Flowers hermaphroditic on infected plants 1689 Lind 1913
Host range 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING
497 Cocconi 1890
2655 Schellenberg 1911

THECAPHORA CUNEATA (Schofield) Clint. Jour. Mycol. 8: 146. 1902.

Sorosporium cuneatum Schofield; Bessey, in Contr. Bot. Dept. Univ. Nebr. 3: 48. 1892.

SPORE GERMINATION AND FACTORS AFFECTING
2159 Norton 1896

THECAPHORA DEFORMANS Dur. and Mont. Ann. Sci. Nat. Bot. III. 7: 110. 1847.

Thecaphora lathyri Kühn, Rabenh. Fung. Europ. 1797. 1873.
Thecaphora affinis Schneider, Jahresb. Schles. Ges. Vat. Kult. 52: 90. 1874.
Sorosporium desmondii Peck, Bot. Gaz. 3: 35. 1878.
Sorosporium astragali Peck, Bot. Gaz. 4: 218. 1879.
Thecaphora orobi Zil., Cif., in Ann Mycol. 29: 61. 1931.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883
1876 Massalongo 1896

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

SPORE GERMINATION AND FACTORS AFFECTING
311 Brefeld 1883
2655 Schellenberg 1911

THECAPHORA LATHYRI Kühn Rabenh. Fungi Europ. 1797. 1873; Hedwigia 13: 58. 1874.

Sorosporium hyalinum Wint., Rabenh. Krypt. Fl. 1: 105. 1881. p.p.
Sorosporium lathyri Ortel, Deutsche Bot. Monatschrift 4: 88. 1886.
Thecaphora hyalina Diedicke, Jahresb. Kgl. Akad. Gem. Wissensch. zu Erfurt N.F. 36: 313. 1910 p.p.
Thecaphora deformans Dur. and Mont., Schellenb. in Beitr. Krypt. Schweiz 3: 158. 1911. p.p.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883

MISCELLANEOUS
Morphology and symptoms 1565 Kühn 1874
Morphology and symptoms 311 Brefeld 1883
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HETEROTHALLISM AND SEX
3266 Woronin 1882 (fusions between promycelial cells)
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3266 Woronin 1882
2660 Schilberszky 1892
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3266 Woronin 1882
2329 Plowright 1889
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141 Barrus and Müller 1943
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Technical description without Latin diagnosis; geographic distribution; effect on host 140 Barrus 1944

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SPORE GERMINATION AND FACTORS AFFECTING
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3095 Vanterpool 1932
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2706 Schulthess 1761
374 Bryant 1783 (discredits seed treatment practices)
1471 Kirby 1799 (early control experiments)

2366 Prevost 1807 (Keitt 1939) (first demonstration and recommendation of use of copper salts for control)
2645 Sandri 1847
1557 Kühn 1859
2126 Nielsen 1873
2127, 2128 Nielsen 1877
94 Arthur 1889
1448 Kellerman and Swingle 1890
2315 Piper 1894
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264 Bolley 1899
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2892 Sutton and Pridham 1907 (effect on wheat germination)
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1689 Lind 1913 (early history)
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1608 Lambert and Bailey 1922
2000 Morettini 1922 (influence of copper compounds on productivity of wheat)
2307 Pichler and Wober 1922 (use of ultra-violet and X-rays and radium)
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1253 Holton and Heald 1941
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1460 Kharbush 1928
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2473 Reichert 1931 (*Aegilops ventricosa*)
928 Gaudineau 1932 (*Aegilops ventricosa*)
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2474 Reichert 1944 (three vars. wild emmer, *Triticum dicoccoides*, highly susceptible)

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1245 Holton 1941 (between dwarf bunt and *Tilletia caries* and *Tilletia foetida*)
1253 Holton and Heald 1941
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1246 Holton 1942 (transgressive inheritance)
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2963 Tessier 1783
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3056 Tulasne and Tulasne 1847
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1567 Kühn 1874

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2070 Munerati 1912
2039 Müller *et al.* 1913
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2535 Roemer and Bartholly 1933
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Morphological changes induced in the host 2347 Potapov *et al.* 1943

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Quantitative determination of spore load of wheat 493 Cobb 1904

By methods of determination of number of smut spores, a minimum number is established at which it is safe to eliminate seed treatment 495 Cobb 1905

Quantitative determination of spore load of wheat 307 Bredemann 1911

Quantitative determination of spore load of wheat seed 1001 Groh 1913

Quantitative determination of spore load of wheat 307 Bredemann 1915

Relation of spore load to per cent of smut 1104, 1105 Heald 1921

Modification of importance of relation of spore load to per cent smut in crop 2071 Munerati 1922

Quantitative determination of percentage of spores in flour samples 309 Bredemann 1923

Quantitative determination of spore load of wheat 309 Bredemann 1923

Relation of spore load to per cent smut 1109 Heald and Boyle 1923

Number of spores per grain as an index to severity of attack 384 Buchheim 1926

Quantitative determination of spore load of wheat seed 1733 Lobik 1927

Determination of number of spores in grain samples 933 Gentner 1929

Spore load of seed and its significance—(cont.)

Number of spores per bunt ball; 450,000 spores weigh .001 grams 370 Brückner 1935

Improved method of detecting bunt spores in seed wheat 2595 Safronova 1936

141,000,000 spores per gram or 1,462,170 per smut ball in mixed sample from one district and 174,000,000 per gram and 2,041,-020 per ball from another district 2347 Potapov *et al.* 1943

Improved method for determining spore load as indication of need for seed treatment 431 Cherewick 1944

Spore load as indication of need for seed treatment 432, 433 Cherewick 1947 and 1948

Miscellaneous unclassified

Chemical composition of smutty wheat 839 Fourcroy 1810

Bromus secalinus, Hordeum murinum and other grasses not susceptible 1566 Kühn 1875

Relationship to *Tilletia* spp. on grasses 1566 Kühn 1875

Development of chlamydospores in culture 311 Brefeld 1883

Historical account 94 Arthur 1889

Spores much less viable after passing through digestive tract of domestic animals 3047 Tubeuf 1901

Bunt spores killed in passage through alimentary tract of horses or cattle 3050 Tubeuf 1902

Detection of spores in hay and fodder 1549 Krenz 1908

12,125,000 spores per spore ball 392 Buller 1909

Spores much less viable after passing through digestive tract of domestic animals 1261 Honcamp *et al.* 1910

Spores lose viability after passage through digestive tract of cattle 70 Appel and Riehm 1911

Chemistry of spore contents 3322, 3323 Zellner 1911

Chemistry of the spores 3324 Zellner 1912

Spores overwintered in soil not viable in spring 72 Appel and Riehm 1914

Fires in threshing separators due to spontaneous combustion of spores 416 Cardiff *et al.* 1914

Accounts and illustrations of explosions and fires in grain separators due to bunt 2367 Price and McCormick 1916

Wind dissemination of spores 1111 Heald and George 1918

Comparison with *Tilletia foetida* re symptoms and morphology 2351, 2352 Potter and Coons 1918

Effect of formaldehyde on wheat seed 128 Bakke and Plagge 1919

Spores found in human feces 372 Bruntz 1919

Effect of control measures on germination of seed 3340 Zundel 1921

Effect of formaldehyde on wheat 111 Atwood 1922

Effect of ultra-violet and X-rays and radium on spore germination 2307 Pichler and Wober 1922

Caused by wind-borne spores in Oregon 2839 Stephens and Woolman 1922
Comparative (with *Tilletia foetida*) incidence in Oregon 2839 Stephens and Woolman 1922
No correlation between H-ion concentration and resistance or susceptibility 1303 Hurd 1923
Combined control with loose smut 2040 Müller *et al.* 1923
Effect of formaldehyde on seed wheat 125 Baker 1924
Development of chlamydospores in culture 2621 Sartoris 1924
Literature review and history, 500 B.C. to 1924 3264 Woolman and Humphrey 1924
Factors contributing to recent severity in Turkestan 3314 Zaprometoff 1924
Biochemistry of the action of fungicides on the spores 249 Bodnar and Terenyi 1925
Violent discharge of sporidia 394 Buller and Vanterpool 1925
Favorable and adverse effects of seed treatment substances on germination of wheat seed. Some stimulatory 2726 Senf 1925
Comparative (with *Tilletia foetida*) incidence in European Russia 2751 Sigriansky 1925
Stimulatory action of certain fungicides on wheat 228 Bittera 1926
Biochemistry of the action of fungicides on the spores 249, 250, 251, 252, 253, 254 Bodnar and Terenyi 1926–1933
Copper carbonate treated seed not bothered by mice 1728 Mackie and Briggs 1926
Partial infection of individual grain 2750 Sieling 1926
No correlation between thickness of pericarp and rate of germination and susceptibility to formalin injury 3325 Zeuschner 1926
Partial infection 3327 Ziling 1926
Chlamydospores (haploid) in culture 286 Boss 1927
Artificial infection of maturing wheat 1937 Milan 1927
Widely distributed in Ireland 2079 Murphy 1927
Comparative distribution of *Tilletia caries* and *T. foetida* in U. S. 3012 Tisdale *et al.* 1927
More important on spring wheat in North Caucasus 41 Andreyeff 1928
Infection of wheat plants by application of spores to wounds at base of plants 1938 Milan 1928
Wheat can become infected with bunt when spores are present in tissues at base of culms during growing period 1938 Milan 1928
Effect of source of origin of inoculum on susceptibility 2026 Mourashkinsky 1928
Incidence in Bulgaria 106 Atanasoff 1929
Method of washing wheat free of smut 147 Bates *et al.* 1929
Effect of soil type and reaction on efficacy of fungicidal dusts 3144 Volk 1929

Miscellaneous unclassified—(cont.)

Effect of ultra-violet radiation on spores 662 Dillon Weston and Halnan 1930

Only *Tilletia caries* on durum wheats 1049 Hanna and Popp 1930

Prevalence in western Canada 1049 Hanna and Popp 1930

Increasing prevalence in U. S. 1086 Haskell *et al.* 1930

Inoculations with pure cultures gave negative results 1461 Kienholz and Heald 1930

Not practical to separate physiologic forms on constant cultural characters 1461 Kienholz and Heald 1930

Bunt collections sent to other countries are less virulent, and reasons for 2471 Reichert 1930

Change from gram-negative to gram-positive in early stages of infection 3262 Woolman 1930

Fungus enters epidermis of both resistant and susceptible seedlings with equal facility 3262 Woolman 1930

Tilletia secalis considered a form of *T. caries* 331 Bressman 1931

Dangers involved in forwarding collections of smut from one country to another 658 Dillon Weston 1931

Traces of bunt on resistant varieties due to mixture of forms in inoculum? 658 Dillon Weston 1931

Relation of pH and osmotic pressure to resistance 951 Giljarovskij and Zak 1931

Superior resistance of durum varieties presumably attributable to the higher pH value of cell sap and higher osmotic pressure 951 Giljarovskij and Zak 1931

Correlation between amount of infection in field and official grading for smut in the threshed grain 1082, 1083 Haskell and Boerner 1931

Durum wheats more susceptible than hard red ones 1083 Haskell and Boerner 1931

Epiphytotic due to development of new forms 1234 Holton 1931

No hereditary acquired immunity developed from seed selected from partially smutted or smut-free individuals in a lot of smutted plants 2276 Petit 1931

Immune varieties should be treated because of possibility of latent infection 3304 Zade 1931

Latent infection can cause considerable reduction in stand of "immune" varieties 3304 Zade 1931

Relation of "stimulatory" action of certain fungicides to latent infection 3304 Zade 1931

Case of smut-docked wheat being caused by heavy contamination with spores of *Ustilago utriculosa* from *Polygonum* growing in field 5 Aamodt and Malloch 1932

Adsorption of mercury salts by the chlamydospores 253 Bodnar and Terenyi 1932

Chemical composition of the spores 412 Campanile 1932

Chemistry of the spores 412 Campanile 1932

Susceptibility of rye, and use as differential host 659 Dillon Weston 1932
Relation of ridged versus flat rows as influencing degree of infection 669 Dobromysloff 1932
Relation of time of planting to efficacy of copper carbonate dust for control 827 Flor 1932
Production of chlamydospores in vegetative parts of secondary shoots from plants that had not previously shown smut 828 Flor 1932
Effect on yield of wheat 830 Flor *et al.* 1932
Inoculum from different sources gives different results 928 Gaudineau 1932
Cause of odor of the spores and genetic dominance of same 1042 Hanna 1932
Trimethylamine isolated, as cause of foetid odor of bunt 1060 Hanna *et al.* 1932
High percentage of infection resulting from wound inoculations 1942 Milan 1932
Count of infected plants does not give true representation of actual loss 2028 Mourashkinsky 1932
Effect of source of origin on susceptibility 2027 Mourashkinsky 1932
Transfer of smut immunity to hard red spring wheat 2769 Smith 1932
Effect of fall versus spring planting on resistance in Hope wheat 2769 Smith 1932
Latent infection in Martin wheat 2773 Smith 1932
Injurious effects of latent infection 3305 Zade 1932
Development of chlamydospores in culture 393 Buller 1933
Violent discharge of sporidia 393 Buller 1933
Overwintering of spores in western Canada 1056 Hanna and Popp 1933
Morphological and pathogenic difference between two races 1237 Holton 1933
Comparative (with *Tilletia foetida*) prevalence and distribution in Argentina 2145 Nieves *et al.* 1933
Method for germinating spores 3098 Vassilievsky 1933
Exposure of spore-contaminated wheat seed to dry heat does not reduce number of smutted plants 3132 Vilkaitis 1933
Prolonged exposure to sub-zero temperatures no adverse effects on spores 3132 Vilkaitis 1933
Comparative (with *Tilletia foetida*) incidence in Romania 2617 Sandu-Ville 1934
Biochemistry of the action of fungicides on the spores 255 Bodnar and Terenyi 1935
Morphological and cytological differences between two races 1239 Holton 1935
Removing smut balls from seed wheat 1310 Hurst *et al.* 1935

Miscellaneous unclassified—(cont.)

Comparison with *Tilletia foetida* and *T. indica* 1963 Mitra 1935

Possible explanations for increase of wheat bunt in Germany in spite of seed treatment 3236 Winkleman 1935

A new variety (dwarf bunt) 3286 Young 1935

"Inheritance of aggressiveness" 181 Becker 1936

Incidence in northeast Bulgaria 456 Cristoff 1936

Natural occurrence on crested wheat grass (*Agropyron cristatum*) 778 Fischer 1936

Relation of per cent bunt to per cent loss in yield 1667 Leukel 1937

Abnormal sporulation in resistant varieties 2672 Schlehuber 1937

Special greenhouse inoculation technique 3151 Voss 1937

Flour quality impaired 3214 Wickens 1937

Immunity not commercially necessary in wheat varieties 3215 Wiebe 1937

Case of respiratory allergy 3248 Wittich and Stakman 1937

All stages of partial infection described 918 Gassner 1938

"Forma intermedia" recognized. A form with very small reticulations and probably a natural hybrid with *Tilletia foetida* 917 Gassner 1938

Incidence and distribution in Turkey 917 Gassner 1938

Tilletia caries f. *intermedia* with fine shallow reticulations 917 Gassner 1938.

Competition with other fungi in the soil 1149 Henry and Campbell 1938

Unique method of inoculation by use of paired monosporidial cultures 1242 Holton 1938

Application of statistical methods to physiologic specialization data 2600 Salmon 1938

Much less prevalent in Wyoming than *Tilletia caries* 2834 Starr 1938

No build-up of susceptibility when resistant varieties inoculated repeatedly with their own smut 212 Bever 1939

Aneurin an indispensable factor in growth 624 Defago 1939

Effect of physical condition of soil on extent of infection 3170 Walstedt 1939

As cause of hay fever and asthma 3246 Wittich 1939

Infection initiated in coleoptiles. Penetration of host by means of small peg through cuticle between epidermal cells 462 Churchward 1940

Zones of prevalence in Germany 1493 Klemm 1940

Comparative incidence with *Tilletia foetida* in Afghanistan and Turkey 1683 Limber 1940

Seasonal asthma caused by spores 631 Diaz *et al.* 1941

Multiplicity of morphological variants in Argentina 1195 Hirschhorn 1941

Compilation of principal available information 1253 Holton and Heald 1941

Effect of station location on bunt reaction 2521 Rodenhiser and Holton 1942

Segregation of natural *Tilletia caries* × *T. foetida* hybrids into two species: *T. triticoides* and *T. intermedia* 2633 Savulescu, Hulea and Stanescu 1942

Dwarf bunt increasing as menace to western states 2523 Rodenhiser and Holton 1945

First report of dwarf bunt in New York 3064 Tyler 1945

Coincidence with *Tilletia foetida* in same caryopsis 979, 980 Grasso 1946

Comparative incidence and morphology with *Tilletia triticoides* and *T. intermedia* 980 Grasso 1946

Incidence and severity in Italy 979, 980 Grasso 1946

Spores inside grain, between pericarp and endosperm 979 Grasso 1946

Comparative distribution (with *Tilletia foetida*) in Bulgaria 1550 Kristev 1946

Distribution and importance in Mexico 2531 Rodriquez 1946

Host selectivity as means of eliminating weak strains of hybrids 1250 Holton 1947

Rapid method of detecting infected heads of wheat 2339 Popp 1947

Comparative incidence and morphology with *Tilletia triticoides* and *T. intermedia* 981 Grasso 1948

PHYSIOLOGIC SPECIALIZATION

2427 Reed 1924
729 Faris 1924
2430 Reed 1927
2527 Rodenhiser and Stakman 1927
882, 883, 884 Gaines 1928
2433 Reed 1928
2513 Rodenhiser 1928
2533 Roemer 1928
1504 Knorr 1929
1233 Holton 1930
1461 Kienholz and Heald 1930
2471, 2472 Reichert 1930
1 Aamodt 1931
332, 333 Bressman 1931
658 Dillon Weston 1931
1234 Holton 1931
830 Flor *et al.* 1932
2773 Smith 1932
327 Brentzel 1933
829 Flor 1933

886 Gaines and Smith 1933
1237 Holton 1933
2141 Nieves 1933 (in Argentina)
2535 Roemer and Bartholly 1933
1239 Holton 1935
2143 Nieves 1935 (in Argentina)
1252 Holton and Heald 1936
2784 Spangenberg and Gutner 1936
2520 Rodenhiser and Holton 1937
2716 Selaries and Rohmer 1937
461 Churchward 1938
623 Defago 1938
1243 Holton 1938
2536 Roemer *et al.* 1938
782 Fischer 1939 (reaction of races to selections of crested and slender wheat grasses, *Agropyron cristatum* and *A. trachycaulum*)
816 Fittschen 1939
2635 Savulescu and Sandu-Ville 1939 (physiologic races in Romania composed of a complex of biotypes. Biometrically significant differences in some races)
3353 Zybina 1939
1253 Holton and Heald 1941
1246 Holton 1942
1255 Holton and Rodenhiser 1942
2521 Rodenhiser and Holton 1942
2523 Rodenhiser and Holton 1945
3300 Yu *et al.* 1945 (in China)
1550 Kristev 1946
1250 Holton 1947

SPORE GERMINATION AND FACTORS AFFECTING

2365, 2366 Prevost 1807
196 Berkeley 1847
3056 Tulasne and Tulasne 1854
3057 Tulasne and Tulasne 1854
201 Berkeley 1857
1557 Kühn 1859
1225 Hoffman 1860
2188 Ørsted 1863
803 Fischer v. Waldheim 1869
520 Cooke 1872
617 DeBary 1874
3252 Wolff 1874
1678 Von Liebenberg 1879
2664 Schindler 1880
2677 Schmaler 1880
311 Brefeld 1883

313 Brefeld 1888
2329 Plowright 1889
3047 Tubeuf 1901
3050, 3051 Tubeuf 1902
3146 Volkart 1906
1763 McAlpine 1910
1260 Honcamp 1911
2655 Schellenberg 1911
2803 Stakman 1913
1114 Heald and Woolman 1915
1479 Kirchner 1916
2231 Paravicini 1917
2727 Sessous 1920
590 Dastur 1921
1163 Heuser 1922
2416 Rawitscher 1922 (germination—reduction division—takes place within the spore and not in the promycelium)
907 Gassner 1923
2492 Riehm 1923
3263 Woolman and Humphrey 1924
395 Buller 1925
1019 Hahne 1925
1229 Hollrung 1925
1655 Leszczenko 1927
2390 Rabien 1927
2407 Rapin 1927 (effect of temperature on)
2957 Terenyi 1927
1461 Kienholz and Heald 1930
332 Bressman 1931
826 Flor 1932
3331 Zillig 1932
393 Buller 1933
2535 Roemer and Bartholly 1933
3098 Vassilievsky 1933
1043 Hanna 1934
3179 Wang 1934
2175 Olgyay 1935
181 Becker 1936
1737 Lobik and Dahlstrem 1936 (methods of)
623 Defago 1938
919 Gassner 1938
1433 Keil 1940
1245 Holton 1941 (of the "sterile" cells of dwarf bunt)
1253 Holton and Heald 1941
1248 Holton 1943 (dwarf bunt)
2347 Potapov *et al.* 1943

1286 Hulea 1947 (including *Tilletia triticoides* and *T. intermedia*)
1740 Lowther 1948 (dwarf bunt)

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

3044 Tscharner 1764
1578 Kühn 1880
740 Farrer 1901 (pioneer work on varietal resistance)
2294 Pey 1901
3047 Tubeuf 1901 (pioneer work on varietal resistance)
169 Beattie 1902
3050 Tubeuf 1902 (pioneer work on varietal resistance studies)
744 Farrer 1904 (pioneer work on production of resistant varieties by hybridization)
745 Farrer 1905 (pioneer work on production of resistant varieties by hybridization)
1122 Hecke 1906
1476 Kirchner 1906
2887 Sutton 1906
62 Appel and Gassner 1907
1124 Hecke 1907
1276 Howard and Howard 1907
1850 Malkoff 1907
1477 Kirchner 1908
2250 Peglion 1908
582 Darnell-Smith 1909
1126 Hecke 1909
1759 McAlpine 1909
583 Darnell-Smith 1910
1761, 1763 McAlpine 1910
2888 Sutton 1910
2069 Munerati 1911
2070 Munerati 1912
3105 Vavilov 1913
3259 Woolman 1914
1114 Heald and Woolman 1915
1479 Kirchner 1916
1480 Kirchner 1916
875 Gaines 1918
3106 Vavilov 1918
3106 Vavilov 1918 (no permanent genetic resistance in wheat to *Tilletia caries*. Resistance has been confused with disease escaping.)
876 Gaines 1919
2253 Peglion 1919
2696 Schribaux 1919
2869 Strampelli 1919
877 Gaines 1920

1999 Morettini 1920
2889 Sutton 1920
3054 Tubeuf 1920
675 Donkin 1921
1481 Kirchner 1921
1163 Heuser 1922
2071 Munerati 1922
2839 Stephens and Woolman 1922
119 Babowitz 1923
368 Brown 1923
878 Gaines 1923
1303 Hurd 1923
1392 Johnston 1923
529 Coons 1924
947 Gibs 1924
1393 Johnston 1924
3264 Woolman and Humphrey 1924 (history of)
3302 Zade 1924
879 Gaines 1925
1304 Hurd-Karrer 1925
2728 Sessous 1925
2783 Spangenberg 1925
3014 Tisdale *et al.* 1925
343 Briggs 1926
885 Gaines and Singleton 1926
275 Borghardt 1927
2604 Sampson 1927
2865 Straib 1927
2998 Tingey 1927
2470 Reichert 1928
80 Arnaud 1929
329 Brentzel and Smith 1929
345 Briggs 1929
553 Creseke 1929
654 Dillon Weston 1929
948 Gibs 1929
950 Gieseke 1929
1504 Knorr 1929
1684 Limbourn 1929
84 Arnaud and Gaudineau 1930
346, 347, 348 Briggs 1930
1232 Holton 1930
1685 Limbourn 1930
2138, 2139 Nieves 1930 (same varieties resistant also to *Ustilago tritici*)
2471 Reichert 1930
1 Aamodt 1931

330, 332, 333 Bressman 1931
349 Briggs 1931
457 Churchward 1931
951 Giljarovskij and Zak 1931
86, 87 Arnaud and Gaudineau 1932
335 Bressman 1932
350, 351 Briggs 1932
458 Churchward 1932
659 Dillon Weston 1932
665, 666 Djelaloff 1932
764 Feucht 1932
928 Gaudineau 1932
1532 Krause 1932
2769 Smith 1932
90 Artemoff 1933
338 Bressman and Harris 1933
352 Briggs 1933
476 Clark *et al.* 1933
886 Gaines and Smith 1933
1466 Kilduff 1933
2074, 2075 Munerati 1933
2535 Roemer and Bartholly 1933
2669 Schlehuber 1933
2775 Smith 1933
116 Ausemus 1934
353 Briggs 1934
408 Calniceanu 1934
2886 Sutherland and Jodon 1934
3243 Wismer 1934
354 Briggs 1935
375 Bryzgalova 1935
834 Fomin 1935
2670 Schlehuber 1935
2999 Tingey 1935
1865 Martin 1936
2144 Nieves 1936
2671 Schlehuber 1936 (different degrees of resistance in F_2 progeny)
373 Bryan 1937
550 Crepin, Bustarret and Chevalier 1937
2716 Selaries and Rohmer 1937
3151 Voss 1937
3215 Wiebe 1937
461 Churchward 1938
552 Crepin, Bustarret and Chevalier 1938
2525 Rodenhiser and Quisenberry 1938
2536 Roemer *et al.* 1938

2673 Schlehuber 1938
3137 Vogel and Holton 1938
782 Fischer 1939 (of wheatgrasses)
816 Fittschen 1939
3353 Zybina 1939
355 Briggs 1940
133 Bamberg 1941
1253 Holton and Heald 1941
2824 Stanford 1941
1257 Holton and Suneson 1942
2521 Rodenhiser and Holton 1942 (variability in varietal reaction)
324 Bremer 1943
1258 Holton and Suneson 1943 (dwarf bunt)
3258 Woodward and Tingey 1944
126 Baker and Briggs 1945
699 El-Khishen and Briggs 1945
1550 Kristev 1946
2408 Rapin 1946

TILLETIA CONTRAVERSA Kühn* Hedwigia 13: 188. 1874.

Uredo segetum tritici-repentis DC., Encycl. Bot. 8: 227. 1808.
Uredo sitophila agropyri Opiz, Sesnam rostlin Kventeny ceske. ii + 216 pp. Prague. 1852.
Tilletia tritici-repentis (DC.) Liro, Ann. Acad. Sci. Fenn. A, 42: 77. 1938.

HETEROTHALLISM AND SEX
315 Brefeld 1895 (fusion of primary sporidia)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895
1884 Mattirolo 1896
MISCELLANEOUS
Relationship to *Tilletia caries* and other species 1563 Kühn 1874
Morphology and symptoms 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
Relation to *Tilletia caries* 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

TILLETIA DECIPIENS (Pers.) Körn. Hedwigia 16: 30. 1877.

Uredo segetum var. *decipiens* Pers., Syn. Fung. 225. 1801.
Uredo decipiens var. *graminum* Strauss, Ann. Wett. Ges. 2: 111. 1810.
Erysibe sphaerococca var. *agrostidis* Wallr., Fl. Krypt. Germ. 2: 213. 1833.
Uredo (Ustilago) sphaerococca Rabenh., Deutschland Krypt. Fl. 1: 4. 1844.
Tilletia caries var. *agrostidis* Auersw., Rabenh. Fungi Europ. 700. 1864.
Tilletia sphaerococca Fisch. v. Waldh., Bull. Soc. Nat. Mosc. 40: 255. 1867.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

* Usually spelled controversa, but Kühn, 1874, himself originally designated the species in question as "contraversa".

HETEROTHALLISM AND SEX
315 Brefeld 1895 (fusion of primary sporidia)
MISCELLANEOUS
Infected plants spurned by cattle 862 Fries 1823
Wheat immune to 3238 Winter 1878
Morphology and symptoms 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
Host range 1724 Liro 1938
Infected plants dwarfed and as such were described by Linnaeus as *"Agrostis pumila"* 1724 Liro 1938 1566 Kühn 1875
Revision of *Tilletia*; comparison with *T. eremophila* and *T. muhlenbergiae* 1210 Hirschhorn 1944
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
2655 Schellenberg 1911
564 Cunningham 1924

TILLETIA EARLEI Griff. Bull. Torr. Bot. Club 29: 290. 1902.
Ustilago earlei Cif., Trans. Brit. Mycol. Soc. 18: 263. 1934.
MISCELLANEOUS
Should be placed in *Ustilago*, on basis of species description only 472 Ciferri 1934

TILLETIA EREMOPHILA Speg. Ann. Mus. Nac. Buenos Aires 12: (3) 291. 1902.
Tolyposporella eremophila Cif., Soc. Bot. Ital. Fasc. 17: 224. 1938.
MISCELLANEOUS
Revision of *Tilletia*; comparison with *T. muhlenbergiae* and *T. decipiens* 1210 Hirschhorn 1944

TILLETIA EUPHORBIAE Lenz Mycologia 33: 155. 1941.
MISCELLANEOUS
Symptoms and morphology 1650 Lenz 1941
SPORE GERMINATION AND FACTORS AFFECTING
1650 Lenz 1941

TILLETIA FOETIDA (Wallr.) Liro Maanviljelys Talondellinen Doelaitos, Vuosikvija 1915–1916: 27. 1920.
Erysibe foetida Wallr., Fl. Crypt. Germ. 2: 213. 1833.
Ustilago foetans Berk. and Curtis, Ravenel Fungi Carol. 100. 1860.
Tilletia laevis Kühn, Rabenh. Fungi Europ. 1697. 1873; Hedwigia 12: 152. 1873.
Ustilago foetans Berk. and Curtis, Hedwigia 3: 59. 1874; Ravenel Fungi Carol. 5: 100. 1860.
Tilletia foetans Schröt., in Beitr. Biol. Pflanz. (Cohn) 2: 365. 1877.
Tilletia foetans Trel., Paras. Fungi Wisc. 35: 1884; Trans. Wisc. Acad. Sci. 6: 139. 1884.
CONTROL
1471 Kirby 1799
2365, 2366 Prevost 1807 (Keitt 1939) (first demonstration of

toxicity of copper salts to the spores and recommendations of use for control)
489 Cobb 1891
1729 Ljubanski 1902
1901 Melchers 1916
525 Coons 1920
289 Bouillard 1922
526 Coons 1922
1113 Heald and Smith 1922
1187 Hiltner and Lang 1922 (fertilization with calcium cyanimide)
2839 Stephens and Woolman 1922
527, 528 Coons 1923
847 Fraser and Simmonds 1923
907 Gassner 1923
920 Gassner and Esdorn 1923
1116 Heald, Zundel and Boyle 1923
2040 Müller *et al.* 1923
2095 Neill 1923
2816 Stakman and Lambert 1923
530 Coons 1924
587 Darnell-Smith 1924
710 Esdorn 1924
713 Esmarch 1924
759 Ferdinandsen 1924
775 Fischer 1924
908 Gassner 1924
1773 McKillican 1924
1915 Melchers and Walker 1924
2041 Müller *et al.* 1924
2382 Puttick 1924
2599 Salmon and Wormald 1924
3112 Vermorel 1924
3140 Vogt 1924
3205 Westermeier 1924
3263 Woolman and Humphrey 1924
123 Bailly 1925
166 Baunacke 1925
854 Friedrichs 1925
910 Gassner 1925
1229 Hollrung 1925
2045 Mullet 1925
2324 Plaut 1925
2494, 2496 Riehm 1925
3113 Vermorel 1925
926 Gassner and Rabien 1926
1168 Hilgendorff 1926

1659 Leukel 1926
1920 Mencacci 1926
2044 Müller *et al.* 1926
2295 Pfeil 1926
2505 Rivera 1926 (X-rays ineffective)
2646 Schaffnit 1926
3206 Westermeier 1926
40 Andreyeff 1927
703 Englisch 1927
913, 914 Gassner 1927
970 Gram 1927
1222, 1223 Hoffman 1927
1463 Kiesselbach 1927
1687 Limbourn and Throssell 1927
1978 Molz 1927 (history of dusting seed for control)
2263 Petit 1927
2500 Riehm 1927
3142, 3143 Volk 1927
12 Adams 1928
276 Borghardt 1928
712 Esdorn 1928
831, 832 Florimond-Desprez 1928
869 Fromme 1928
971 Gram 1928
1012 Guyot 1928
1745 Lungren and Durrell 1928
2133, 2134 Niethammer 1928
2254 Peltier 1928
2264, 2265, 2266, 2267 Petit 1928
2008 Morris and Kurtz 1929
2268 Petit 1929
3144 Volk 1929
83, 84 Arnaud and Gaudineau 1930
1110 Heald and Gaines 1930
1187 Hiltner and Tornow 1930
2270, 2271 Petit 1930
10 Abramoff 1931
2272, 2273, 2274, 2275, 2277 Petit 1931
3061 Twentyman 1931
86, 87 Arnaud and Gaudineau 1932
278 Borghardt 1932
665, 666 Djelaloff 1932
678 Dounine and Simsky 1932
1532 Krause 1932
2278 Petit 1932
2302 Pichler 1932
691 Eckhoff 1933

2279 Petit 1933
1704 Lindfors 1934
2018 Morwood 1935
2047 Muncie and Frutchey 1935
2256 Perevesentzeva 1935
2281, 2283 Petit 1935
2303, 2304 Pichler 1935
626 Denaiffe *et al.* 1936
1252 Holton and Heald 1936
2618 Sandu-Ville 1936
1667 Leukel 1937
2794 Sprague *et al.* 1937
777 Fischer *et al.* 1938
1275 Houdayer 1938
1866 Martin 1938
1867 Martin and Sprague 1938 (no differences in response of various races to seed treatment)
1672 Leukel and Nelson 1939
2290 Petit 1939
2793 Sprague 1939
1410, 1411 Jones and El Nasr 1940
2030 Mourashkinsky 1940
1253 Holton and Heald 1941
1353 Jamalainen 1943
81 Arnaud 1944
2632 Savulescu and Hulea 1944
324 Bremer 1945
3283 Yersin *et al.* 1945
191 Benloch 1946 (laboratory tests of fungicides)
2756 Simmonds 1948 (use of oil to counteract dust nuisance with fungicides)

CULTURE ON ARTIFICIAL MEDIA

240 Bodine and Durrell 1930
1461 Kienholz and Heald 1930
239 Bodine 1931
826 Flor 1932
393 Buller 1933
829 Flor 1933
1908 Melchers 1934
623 Defago 1938
1253 Holton and Heald 1941
1286 Hulea 1947

CYTOLOGY

771 Fisch 1885
579 Dangeard 1892
1840 Maire 1902
2415 Rawitscher 1914

393 Buller 1933
1043 Hanna 1934
3179 Wang 1934
1253 Holton and Heald 1941

HETEROTHALLISM AND SEX

825 Flor 1931
826 Flor 1932
1043 Hanna 1934
1253 Holton and Heald 1941
1286 Hulea 1947

HOST RANGE

1332 Ivanoff 1926 (rye infected in Bulgaria)
1734 Lobik 1930 (on rye in North Caucasus)
334 Bressman 1932 (*Lolium* infected)
2141 Nieves 1933 (infection of rye)
2143 Nieves 1935 (infection of rye)
778 Fischer 1936
1724 Liro 1938
782 Fischer 1939 (new grass hosts)
18 Ajroldi 1940 (rye not susceptible under Italian conditions)
1253 Holton and Heald 1941

HYBRIDIZATION AND GENETICS

825 Flor 1931 (with *Tilletia caries*)
826 Flor 1932 (with *Tilletia caries*)
1043 Hanna 1934 (with *Tilletia caries*)
181 Becker 1936 (with *Tilletia caries*)
917 Gassner 1938 (natural hybridization with *Tilletia caries*)
1243 Holton 1938 (with *Tilletia caries*)
1245 Holton 1941 (*Tilletia foetida* × "dwarf bunt" race of *Tilletia caries*)
1253 Holton and Heald 1941
1247 Holton 1942 (pathogenicity of hybrids with *Tilletia caries*)
1249 Holton 1944 (inheritance of chlamydospore and sorus characters in inter-race and inter-species hybrids with *Tilletia caries*)
1250 Holton 1947 (with *Tilletia caries*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2995 Tillet 1755
1471 Kirby 1799
1560 Kühn 1873 (early inoculation experiments with Triticum spp.)
1562 Kühn 1874
3252 Wolff 1874
93, 94 Arthur 1889
263 Bolley 1897
2717 Selby 1898
3047, 3048 Tubeuf 1901

3049, 3050, 3051 Tubeuf 1902
1729 Ljubanski 1902
1333 Ivanoff 1903
1271 Hori 1907
2250 Peglion 1908
1763 McAlpine 1910
2252 Pèglion 1910
321 Brefeld 1912
139 Barrus 1916
2351, 2352 Potter and Coons 1918
1163 Heuser 1922
1186 Hiltner and Lang 1922
2071 Munerati 1922
2072 Munerati 1923
729 Faris 1924
946, 947 Gibs 1924
1936 Milan 1924
2427 Reed 1924
3263, 3264 Woolman and Humphrey 1924
910 Gassner 1925
2024 Mourashkinsky 1925
46 Antonoff 1926
424 Caspar 1926
3206 Westermeier 1926
1937 Milan 1927 (artificial infection of maturing wheat)
2613 Sampson and Davies 1927
2865 Straib 1927
40 Andreyeff 1927
41 Andreyeff 1928
869 Fromme 1928
1745 Lungren and Durrell 1928
1938 Milan 1928
2031 Mouravieff 1928
9 Abramoff 1930
1110 Heald and Gaines 1930
2138 Nieves 1930
1941 Milan 1931
665, 666 Djelaloff 1932
764 Feucht 1932
828 Flor 1932
2028 Mourashkinsky 1932
2774 Smith 1932
829 Flor 1933
3285 Young 1933
1043 Hanna 1934
2029 Mourashkinsky 1934
17 Ajroldi 1937

550 Crepin *et al.* 1937
1667 Leukel 1937
623 Defago 1938
917, 918, 919 Gassner 1938
1409 Jones and El Nasr 1938
1866 Martin 1938
2834 Starr 1938
3119 Vielwerth 1938
782 Fischer 1939 (perennation in perennial hosts)
2793 Sprague 1939
18 Ajroldi 1940
1071 Hanson and Tervet 1940
1493 Klemm 1940
2529 Rodenhiser and Taylor 1940
1253 Holton and Heald 1941
2521 Rodenhiser and Holton 1942
2632 Savulescu and Hulea 1944
134 Bamberg *et al.* 1947

LONGEVITY OF SPORES

1678 von Liebenberg 1879
2759 Sitensky 1896
3263, 3264 Woolman and Humphrey 1924
1004 Guest 1929
779 Fischer 1936
1253 Holton and Heald 1941

MISCELLANEOUS

Effect on wheat quality 1471 Kirby 1799
Infected plants little if any dwarfed as compared with those infected with *Tilletia caries* 1076 Harwood 1892
Bunt spores killed in passage through alimentary tract of horses or cattle 3051 Tubeuf 1902
Quantitative determination of spores in flour, bran and grain 306 Bredemann 1911
Chemistry of spore contents 3322, 3323 Zellner 1911
Seed heavily contaminated with spores is not injurious as feed for livestock 2380 Pusch 1912
Chemistry of the spores 3324 Zellner 1912
Fires in threshing separators due to spontaneous combustion of spores 416 Cardiff *et al.* 1914
Determination of smut spore content in flour, bran and grain 307, 308 Bredemann 1915
Pathological morphology 139 Barrus 1916
Comparison with *Tilletia caries* re symptoms and morphology 2351, 2352 Potter and Coons 1918
Effect of formaldehyde on wheat seed 128 Bakke and Plagge 1919
Prevention of explosions and fires in threshing machines due to smut 2539 Roethe 1920

Smut-infected plants more susceptible to rusts 3110 Verhoeven 1920
Suppression of awns in wheat-spelt hybrid 2965 Thatcher 1921
Effect of control measures on germination of seed 3339, 3340 Zundel 1921
Effect of formaldehyde on wheat 111 Atwood 1922
Modification of importance of spore load to per cent smut in crop 2071 Munerati 1922
Caused by wind-borne spores in Oregon 2839 Stephens and Woolman 1922
In western but not eastern Oregon 2839 Stephens and Woolman 1922
Determination of spore load 309 Bredemann 1923
Relation of spore load to per cent smut 1109 Heald and Boyle 1923
Effect of formaldehyde on seed wheat 125 Baker 1924
Literature review and history 500 B.C. to 1924 3264 Woolman and Humphrey 1924
Factors contributing to recent severity in Turkestan 3314 Zaprometoff 1924
Biochemistry of the action of fungicides on the spores 249 Bodnar and Terenyi 1925
Morphological responses of host 2024 Mourashkinsky 1925
Comparatively rare in Russia 2751 Sigriansky 1925
Stimulatory action of certain fungicides on wheat 228 Bittera 1926
Biochemistry of the action of fungicides on the spores 249–254 Bodnar and Terrenyi 1926–33
Losses in Kansas and Colorado 1079 Haskell 1926
Copper carbonate treated seed not bothered by mice 1788 Mackey and Briggs 1926
Comparative distribution of *Tilletia caries* and *T. foetida* in U. S. 3012 Tisdale *et al.* 1926
Toxic effects of bunt-contaminated wheat bran on sheep and pigs 3189 Weiser 1926
No correlation between thickness of pericarp and rate of germination of seed and susceptibility to formalin injury 3325 Zeuschner 1926
Artificial infection of maturing wheat 1937 Milan 1927
Effect on growth and morphology 2613 Sampson and Davies 1927
More important on winter wheat 41 Andreyeff 1928
Rye mixed with winter wheat resulted in higher percentage of bunt 129 Balakhonoff 1928
Infection of wheat plants by application of spores to wounds at base of plants 1938 Milan 1928

Wheat can become infected with bunt when spores are present in tissues at base of culms during growing period of host 1938 Milan 1928

Increase of strain of smut on same wheat variety increases virulence of strain 2026 Mourashkinsky 1928

Effect of smut spores on the digestibility of milling bran 2893 Svoboda 1928

Incidence in Bulgaria 106 Atanasoff 1929

Method of washing wheat free of smut 147 Bates *et al.* 1929

Effect of grazing on extent of wheat smut 768 Finnell 1929

Determination of number of spores in grain samples 933 Gentner 1929

Simultaneous incidence with *Tilletia caries* on same plant 2772 Smith 1929

Effect of soil type and reaction on efficacy of fungicidal dusts 3144 Volk 1929

Inoculation methods 240 Bodine and Durrell 1930

Inoculation of wheat plants up to 18 inches tall 240 Bodine and Durrell 1930

Production of chlamydospores in culture 240 Bodine and Durrell 1930

Biochemistry of the action of fungicides on the spores 252 Bodnar and Terrenyi 1930

Prevalence in western Canada 1049 Hanna and Popp 1930

Increasing prevalence in U. S. 1086 Haskell *et al.* 1930

Inoculations with pure cultures gave purely negative results 1461 Kienholz and Heald 1930

Not practicable to separate physiologic forms on constant cultural characters 1461 Kienholz and Heald 1930

Incidence on rye 1734 Lobik 1930

Double plate method good for culturing 239 Bodine 1931

Correlation between amount of infection in field with official grading for smut in threshed grain 1083 Haskell and Boerner 1931

Durum spring wheats more susceptible than hard red ones 1083 Haskell and Boerner 1931

Epiphytotic due to development of new forms 1234 Holton 1931

No hereditary acquired immunity developed from seed selected from partially smutted or smut-free plants in a smutted lot 2275 Petit 1931

Length of host plant culms reduced by 2514 Rodenhiser 1931

Immune varieties should be treated because of possibility of latent infection 3304 Zade 1931

Latent infection can cause considerable reduction in stand of immune varieties 3304 Zade 1931

Relation of "stimulatory" effect of certain fungicides to latent infection 3304 Zade 1931

Incidence of smut-docked wheat as a result of contamination with

spores of *Ustilago utriculosa* from *Polygonum lapathifolium* 5 Aamodt and Malloch 1932

On *Lolium* spp. 334 Bressman 1932

Produces taller infected plants than does *Tilletia caries* 336 Bressman 1932

Relation of ridged versus flat rows as influencing infection—669 Dobromysloff 1932

Both slender and thick types of smut balls produced by *Tilletia foetida* and *T. caries* 764 Feucht 1932

Effect of fertilizers on 764 Feucht 1932

Higher incidence of infection following peas than wheat 764 Feucht 1932

An undertermined number of sex groups represented 826 Flor 1932

Production of chlamydospores in vegetative parts of secondary shoots of plants that had not previously shown smut 828 Flor 1932

Relation of time of planting to the efficacy of copper carbonate dust for control 827 Flor 1932

Cause of odor of spores and genetic dominance of same 1042 Hanna 1932

Isolation of trimethylamine from spores 1060 Hanna *et al.* 1932

Trimethylamine, the cause of bunt odor, not in *Tilletia caries* 1042 Hanna *et al.* 1932

High percentage of infection resulting from wound inoculations 1942 Milan 1932 (needle prick at base of culm or by being broken off at base of culm)

Build-up of virulence by five years continuous passage through same wheat variety 2026, 2027 Mourashkinsky 1932

Count of infected plants does not give actual loss 2028 Mourashkinsky 1932

Effect of source of origin on susceptibility 2026, 2027 Mourashkinsky 1932

Increase of strain of smut on same wheat variety increases virulence of strain 2027 Mourashkinsky 1932

Transfer of smut immunity to hard red spring wheat 2769 Smith 1932

Effect of fall versus spring planting on susceptibility of Hope wheat 2774 Smith 1932

Further studies on latent infection and effect on host plant 3305 Zade 1932

Biochemistry of the action of fungicides on the spores 254 Bodnar and Terenyi 1933

Successful artificial inoculation of emmer 327 Brentzel 1933

Screening effect of differential varieties on mixed collections 829 Flor 1933

More caryopses on bunted heads than on healthy ones 1945 Milan 1933

Severely affected plants tiller less than healthy ones 1945 Milan 1933

Comparative (with *Tilletia caries*) prevalence and distribution in Argentina 2145 Nieves *et al.* 1933

Soil infestation of chlamydospores 3285 Young 1933

Recognition of infection by deformation of seedlings 42 Angell 1934

Build-up of pathogenicity by repeated inoculation of variety with own smut 1908 Melchers 1934

Comparative (with *Tilletia caries*) incidence in Romania 2617 Sandu-Ville 1934

Biochemistry of the action of fungicides on the spores 255 Bodnar *et al.* 1935

Removing smut balls from seed wheat 1310 Hurst *et al.* 1935.

Comparison with *Tilletia caries* and *T. indica* 1963 Mitra 1935

Effect of infection on the morphology of wheat plants 7 Aamodt *et al.* 1936

Longevity of spores; at least 25 years 779 Fischer 1936

Ratio of per cent bunt to per cent loss in yield 1667 Leukel 1937

Effect of bunt on the host varies with the wheat variety 2672 Schlehuber 1937

Freezing injury more severe in certain varieties of wheat infected with bunt 2672 Schlehuber 1937

Flour quality impaired by 3214 Wickens 1937

Causing respiratory allergy 3248 Wittich and Stakman 1937

All stages of partial infection described 918 Gassner 1938

Incidence and distribution in Turkey 917 Gassner 1938

Effect of bunt infection on root development 1136 Hely *et al.* 1938

Competition with other fungi in soil 1149 Henry and Campbell 1938

Unique method of inoculating with paired monosporidial cultures 1242 Holton 1938

Screening effect of wheat varieties on smut mixtures 2399 Radulescu 1938

Application of statistical methods to physiologic specialization data 2600 Salmon 1938

Much more prevalent than *Tilletia caries* in Wyoming 2834 Starr 1938

Build-up of pathogenicity when collection cultured successively on other than host variety on which collected 3119 Vielwerth 1938

Decline in pathogenicity when collection cultured on only moderately susceptible host and same host on which collected 3119 Vielwerth 1938

No build-up of susceptibility of host or pathogenicity of race when resistant varieties inoculated repeatedly over a three-year period with their own smut 212 Bever 1939

Causes chlorotic mottling of wheat leaves 1396 Johnston and Lefebvre 1939
Effect of physical condition of soil on extent of infection 3170 Walstedt 1939
As cause of hay fever and asthma 3246 Wittich 1939
Effect of fertilizers on development 1071 Hanson and Tervet 1940
Zones of prevalence in Germany 1493 Klemm 1940
Comparative incidence with *Tilletia caries* in Afghanistan and Turkey 1683 Limber 1940
Vernalized seed gives high rate of infection 2030 Mourashkinsky 1940
Influence of soil type, sterilizaton and pH on extent of infection at different temperatures 2528, 2529 Rodenhiser and Taylor 1940
Seasonal asthma caused by spores 631 Diaz *et al.* 1941
Pine wood smoke only partially effective as control 1353 Jamalainen 1942
Effect of station location on bunt reaction 2521 Rodenhiser and Holton 1942
Segregation of natural *Tilletia caries* × *T. foetida* hybrids into two species: *Tilletia triticoides* and *T. intermedia* 2633 Savulescu *et al.* 1942
Improved method of determining spore load as indication of need for seed treatment 431 Cherewick 1944
Rag-doll technique for inoculation purposes 1728 Livingston and Kneen 1944
Coincidence with *Tilletia caries* in same caryopsis 979, 980 Grasso 1946
Incidence and importance in Italy 979, 980 Grasso 1946
Spores inside grain between pericarp and endosperm 979 Grasso 1946
Fusarial head blight depresses when in same plant 1068 Hanson 1946
Predisposes infected plants to seedling blight 1069 Hanson 1946
Comparative (with *Tilletia caries*) distribution in Bulgaria 1550 Kristev 1946
Distribution and importance in Mexico 2531 Rodriguez 1946
Depresses dwarf bunt when in same plant 134 Bamberg *et al.* 1947
Spore load of grain as indication of need for seed treatment 432, 433 Cherewick 1947 and 1948
Host selectivity as means of climinating weak hybrids (*Tilletia caries* × *T. foetida*) 1250 Holton 1947
Rapid method of detecting infection in heads of wheat 2339 Popp 1947

PHYSIOLOGIC SPECIALIZATION

2430 Reed 1927
2527 Rodenhiser and Stakman 1927
882, 883, 884 Gaines 1928
2433 Reed 1928
2513 Rodenhiser 1928
106 Atanasoff 1929
1461 Kienholz and Heald 1930
1 Aamodt 1931
332, 333 Bressman 1931
1234 Holton 1931
327 Brentzel 1933
829 Flor 1933
886 Gaines and Smith 1933
2141 Nieves 1933
1908 Melchers 1934
2143 Nieves 1935
2520 Rodenhiser and Holton 1937
3119 Vielworth 1938
782 Fischer 1939 (reaction of races to selections of crested and slender wheat grasses)
2635 Savulescu and Sandu-Ville 1939 (physiologic races in Romania composed of a complex of biotypes. Biometrically significant differences in some races.)
3351 Zybina 1939
1253 Holton and Heald 1941
1255 Holton and Rodenhiser 1942
2521 Rodenhiser and Holton 1942
1067 Hansing and Melchers 1945
2523 Rodenhiser and Holton 1945 (5 new races)
3300 Yu *et al.* 1945

SPORE GERMINATION AND FACTORS AFFECTING

3252 Wolff 1874
2159 Norton 1896
482 Clinton 1902
3146 Volkhart 1906
2803 Stakman 1913
1163 Heuser 1922
3263 Woolman and Humphrey 1924
1019 Hahne 1925
1229 Hollrung 1925
1937 Milan 1927
2390 Rabien 1927
240 Bodine and Durrell 1930
1461 Kienholz and Heald 1930
332 Bressman 1931
826 Flor 1932

2175 Olgyay 1935
623 Defago 1938
919 Gassner 1938
1253 Holton and Heald 1941
1550 Kristev 1946
1286 Hulea 1947

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF
740 Farrer 1901
1850 Malkoff 1907
582 Darnell-Smith 1909
1759 McAlpine 1909
2383 Pye 1909
583 Darnell-Smith 1910
1761, 1763 McAlpine 1910
675 Donkin 1921 (*Triticum* spp.)
1481 Kirchner 1921
2839 Stephens and Woolman 1922
529 Coons 1924
1393 Johnston 1924
2427 Reed 1924
2817 Stakman *et al.* 1924
3302 Zade 1924
2795 Stadler 1925
881 Gaines 1927
2465 Straib 1927
2513 Rodenhiser 1928
329 Brentzel and Smith 1929
1684 Limbourn 1929
1685 Limbourn 1930
2138, 2139 Nieves 1930 (same varieties also resistant to *Ustilago tritici*)
1 Aamodt 1931
330, 332, 333 Bressman 1931
2140 Nieves 1931
86, 87 Arnaud and Gaudineau 1932
335 Bressman 1932
1532 Krause 1932
2769 Smith 1932
90 Artemoff 1933
476 Clark *et al.* 1933
886 Gaines and Smith 1933
1466 Kilduff 1933
2669 Schlehuber 1933
2775 Smith 1933
2886 Sutherland and Jodon 1934
3243 Wismer 1934
2670 Schlehuber 1935

1865 Martin 1936
2144 Nieves 1936
50 Crepin *et al.* 1937
2525 Rodenhiser and Quisenberry 1938
3137 Vogel and Holton 1938
782 Fischer 1939 (wheat grasses)
3353 Zybina 1939
47 Apostolides 1940
1253 Holton and Heald 1941
2521 Rodenhiser and Holton 1942 (variability in varietal reaction)
324 Bremer 1943
3258 Woodward and Tingey 1944
1550 Kristev 1946

TILLETIA FUSCA Ell. and Ev. Jour. Mycol. 3: 55. 1887.

MISCELLANEOUS

Very prevalent smut on annual fescues in central Washington 993 Griffiths 1903
Symptoms and morphology 1763 McAlpine 1910

SPORE GERMINATION AND FACTORS AFFECTING

1763 McAlpine 1910
796 Fischer and Hirschhorn 1945

TILLETIA GUYOTIANA Hariot Jour. Bot. (Paris) 14: 117. 1900.

Thecaphora guyotiana Hariot, Mem. Soc. Acad. Aube 61: 195. Hyponym. 1898.
Tilletia velenovskyi Bubak, Österr. Bot. Zeitschr. 53: 51. 1903.
Tilletia belgradensis Magnus, Hedwigia 48: 145. 1908.

MISCELLANEOUS

Host range 1724 Liro 1938
First report from Switzerland 3148 Volkart 1939

SPORE GERMINATION AND FACTORS AFFECTING

796 Fischer and Hirschhorn 1945

TILLETIA HOLCI (Westend.) DeToni In Sacc. Syll. Fung. 7: 484. 1888.

Polycystis holci Westend., Bull. Acad. Belg. II. 11: 651. 1861.
Tilletia rauwenhoffii Fisch. v. Waldh., Apercu Syst. Ust. 50. 1877.

CULTURE ON ARTIFICIAL MEDIA

3095 Vanterpool 1932

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2149 Noack and Fahrendorff 1925
3331 Zillig 1932
1724 Liro 1938

MISCELLANEOUS

First report from North America 1338 Jackson 1920
Incidence on *Holcus* in Oregon 1338 Jackson 1920

Formation of clamp connections on the mycelium 2732 Seyfert 1927

Incidence in food samples of *Holcus lanatus* 677 Dorph-Peterson 1931

Longevity of spores; at least 12 years (as *Tilletia rauwenhoffii*) 779 Fischer 1936

SPORE GERMINATION AND FACTORS AFFECTING

3095 Vanterpool 1932

TILLETIA HORDEI Körn. Hedwigia 16: 30. 1877.

? *Tilletia trabuti* Jaczewski, Bull. Soc. Mycol. France 9: 50. 1893.

MISCELLANEOUS

Review of other *Tilletia* spp. described on *Hordeum* spp. 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

1763 McAlpine 1910

TILLETIA HYALOSPORA Massee Kew Bul. 153–154: 148. 1899.

MISCELLANEOUS

Revision of *Tilletia*; comparison with *Tilletia hypsophila* 1204 Hirschhorn 1942

TILLETIA HYPSOPHILA Speg. Anal. Mus. Nac. Buenos Aires 12: 59. 1902.

MISCELLANEOUS

Revision of *Tilletia*; comparison with *Tilletia hyalospora* 1204 Hirschhorn 1942

TILLETIA LOLII Auerswald Klotzsch-Rabenh., Herb. Viv. Mycol. ed. I. 1899: 1855.

CYTOLOGY

2416 Rawitscher 1922

MISCELLANEOUS

Wheat not susceptible 3238 Winter 1878

Host range 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

1557 Kühn 1859

2416 Rawitscher 1922

TILLETIA MUHLENBERGIAE Clint. N. A. Flora 7: 46. 1906.

MISCELLANEOUS

Revision of *Tilletia*; comparison with *Tilletia eremophila* and *T. decipiens* 1204 Hirschhorn 1942

TILLETIA OLIDA (Riess) Winter Rabenh. Krypt. Fl. 1: 107. 1881.

Uredo olida Riess, Klotzsch-Rabenh. Herb. Viv. Mycol. 1695. 1852.
Tilletia endophylla DeBary, Rabenh. Viv. Mycol. ed. nova 500. 1857.
Ustilago olida Cif., Fl. Ital. Crypt. 17: 296. 1938.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869

MISCELLANEOUS
Closely related to *Tilletia sessleriae* 1422 Juel 1894
Morphology and symptoms 2655 Schellenberg 1911
Comparative morphology on different hosts 1724 Liro 1938
Host range 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
2698 Schröter 1877

TILLETIA PANCICII Bubak and Ranojevic Zeitschr. Landw. Versuch. Österr. 1899: 545.
CONTROL
1596 Kuribayashi and Ichikawa 1946
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1595 Kuribayashi and Ichikawa 1945
MISCELLANEOUS
Morphology and symptoms and comparison with other *Tilletia* spp. 378 Bubak 1909
Considered cause of stinking smut of barley 2945 Tasugi and Yamde 1925
Infection of barley varieties with 665 Djelaloff 1932

TILLETIA SECALIS (Corda) Kühn Deutsche Landw. Ztg. 19: 650. 1876.
Uredo secalis Corda, in Hlubek, Oekon. Neuigk. u. Verhand. 1848: 10.
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
535 Corda 1848
1569 Kühn 1876
2171 Oertel 1887
MISCELLANEOUS
Collected in N. Y. in 1892; considered distinct from *Tilletia caries* 1338 Jackson 1920
History, distribution and losses in Russia 1346 Jaczewski 1923
Effect on animals 39 Andres and Trussov 1924
Heavy losses in rye in Russia 2751 Sigriansky 1925
Biologically closely related to *Tilletia caries* 2751 Sigriansky 1925
Incidence in Kaluga, Russia 2006 Morozov 1926
Very prevalent in Czecho-Slovakia in 1931 231 Blattny 1931
Considered to be a form of *Tilletia caries* 331 Bressman 1931
Early history 1724 Liro 1938
Validity of the species 1724 Liro 1938
Capricious in severity from year to year 3148 Volkart 1939
Difficult to induce spore germination 3148 Volkart 1939
Distinct from *Tilletia caries* on basis morphology and pathogenicity 3148 Volkart 1939

TILLETIA SEPARATA Kunze Kunze, Fungi Sel. Exs. No. 29. 1876.
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2698 Schröter 1877
1724 Liro 1938

MISCELLANEOUS
Foetid odor of spores 2698 Schröter 1877
Morphology and symptoms 2835 Stec-Rouppertowa 1932
Incidence in Poland 2835 Stec-Rouppertowa 1932
Longevity of spores; at least 12 years 779 Fischer 1936
Host range 1724 Liro 1938
PHYSIOLOGIC SPECIALIZATION
1724 Liro 1938

TILLETIA TEXANA Long in Clint. Jour. Mycol. 8: 149. 1902.
MISCELLANEOUS
Morphology and symptoms 2548 Rosen 1921
Relationship to certain other species of *Tilletia* 2548 Rosen 1921

TILLETIA TUMEFACIENS H. and P. Sydow Ann. Mycol. 10: 255. 1912.
MISCELLANEOUS
Effect on host and general characteristics of the smut 2060 Mundkur 1944
Powerful trimethylamine odor 2060 Mundkur 1944

TILLETIA WILCOXIANA Griff. Bull. Torr. Bot. Club 31: 88. 1904.
MISCELLANEOUS
Infected plants of *Stipa eminens andersoni* (*S. lepida andersoni*) erroneously described as new species, *S. hassei* 3219 Wilcox 1902

TILLETIA ZONATA Bref. Unters. Gesammt. Myk. 12: 161. 1895
CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895
HETEROTHALLISM AND SEX
315 Brefeld 1895 (fusion of primary sporidia)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895
MISCELLANEOUS
Morphology 315 Brefeld 1895

TILLETIA ZUNDELI Hirschh. Rev. Argentina Agron. 10: 186–189. June 1943.
MISCELLANEOUS
Description of disease and effect on host 1207 Hirschhorn 1943
Technical description 1207 Hirschhorn 1943

TOLYPOSPORIUM ANTHISTIRIAE Cobb Agric. Gaz. New S. Wales 3: 1006. 1892.
Tolyposporium anthistiriae P. Henn., Hedwigia 37: 283. 1898.
Tolyposporium bursum McAlp., Smuts of Australia, p. 186. 1910.
MISCELLANEOUS
Spore longevity at least four years 1763 McAlpine 1910
Symptoms and morphology 1763 McAlpine 1910
SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910

TOLYPOSPORIUM BULLATUM Schröt. Krypt Fl. Schles. 3: 276. 1887.

Sorosporium bullatum Schröt., Abh. Schles. Ges. Abth. Nat. Med. 1869–70: 6. 1870.
Tolyposporium senegalense Speg., Ann. Museo Nac. Hist. Nat. 26: 118. 1914.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
Tolyposporium senegalense is synonym 1197 Hirschhorn 1941

SPORE GERMINATION AND FACTORS AFFECTING
2730 Setchell 1892
315 Brefeld 1895
2655 Schellenberg 1911

TOLYPOSPORIUM CENCHRI Bref. Unters. Gesammt. Myk. 12: 156. 1895.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

TOLYPOSPORIUM EHRENBERGII (Kühn) Patouillard Bull. Soc. Mycol. (France) 19: 254. 1903.

Sorosporium ehrenbergii Kühn, Mitteil. Ver. Erdkunde (Holle) 1877: 87. 1887.
Tolyposporium filiferum Busse, Arb. K. Biol. Abt. Landw. Forstw. 4: 384. 1904.
Sorosporium filiferum Zundel, Mycologia 22: 148. 1930.

CONTROL
360 Britton-Jones 1922
3169 Wallace 1931

CULTURE ON ARTIFICIAL MEDIA
401 Busse 1904
1427 Kamat 1933

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1427 Kamat 1933
2361 Prasad 1945

MISCELLANEOUS
Used as food in Egypt when young 360 Britton-Jones 1922
Sorosporium ehrenbergii and *Tolyposporium filiferum* are synonyms 1874 Mason 1926
Distinct from *Sorosporium filiferum* 3342 Zundel 1930

Transferred to *Sorosporium* 3342 Zundel 1930
Incidence in Italian E. Africa on sorghum 425 Castellani 1940
SPORE GERMINATION AND FACTORS AFFECTING
360 Britton-Jones 1922
1427 Kamat 1933

TOLYPOSPORIUM EHRENBERGII (Kühn) Patouillard var. **GRANDIGLOBUM** Uppal and Patel Indian Jour. Agric. 13: 520–521. 1943

MISCELLANEOUS
Technical description and comparison with species 3076 Uppal and Patel 1943

TOLYPOSPORIUM GLOBULIGERUM (Berk. and Br.) Ricker Jour. Mycol. 11: 112. 1905.

Thecaphora globuligera Berk. and Br., Trans. Linn. Soc. II. 1: 407. 1879.
Testicularia leersiae Cornu, Ann. Sci. Nat. VI. 15: 275. 1883. (Type from Algeria on *Leersia hexadra*).
Ustilago leersiae Durien, Cornu in Ann. Sci. Nat. VI. 15: 274. 1883. (As a synonym).

MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910

TOLYPOSPORIUM JUNCI (Schröt.) Woronin Abh. Senck. Nat. Ges. 12: 577. 1882.

Sorosporium junci Schröt., Abh. Schles. Ges. Vat. Kult. 1869–72: 6. 1872.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2698 Schröter 1877
3266 Woronin 1882
647 Dietel 1897

MISCELLANEOUS
First report from North America 1338 Jackson 1920

SPORE GERMINATION AND FACTORS AFFECTING
3266 Woronin 1882
315 Brefeld 1895
2655 Schellenberg 1911
1689 Lind 1913

TOLYPOSPORIUM KOCHIANUM Gäumann Ber. Schweiz. Bot. Ges. 41: 179. 1932

MISCELLANEOUS
Morphology and symptoms 931 Gäumann 1932

SPORE GERMINATION AND FACTORS AFFECTING
931 Gäumann 1932

TOLYPOSPORIUM LEPTIDEUM Sydow. Ann. Mycol. 11: 365. 1913.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
165 Baudyš and Picbauer 1924

SPORE GERMINATION AND FACTORS AFFECTING
165 Baudyš and Picbauer 1924

TOLYPOSPORIUM PENICILLARIAE Bref. Unters, Gesammt. Myk. 12: 154. 1895.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895
16 Ajrekar and Likhite 1933
218 Bhatt 1946

MISCELLANEOUS
Morphology 315 Brefeld 1895
Identical with *Ustilago penniseti* 467 Ciferri 1931

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
3282 Yen 1938

TRACYA HYDROCHARIDIS Lagerh. In Vestergren Mic. Rar. Sel. 396. 1899. Nom. nud. Bot. Not. 1902: 175.

Doassansia reukaufii P. Henn., Hedwigia 43: 434. 1904. (Misspelled as "Renkaufii.")

HETEROTHALLISM AND SEX
2480 Reukauf 1906

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2480 Reukauf 1906
2655 Schellenberg 1911
1724 Liro 1938

MISCELLANEOUS
Morphology and symptoms 2480 Reukauf 1906
Morphology and symptoms 2655 Schellenberg 1911

SPORE GERMINATION AND FACTORS AFFECTING
2480 Reukauf 1906
2655 Schellenberg 1911

TUBURCINIA PARIDIS (Unger) Vestergren Bih. Vet.-Akad. Handl. 22 (Afd. 3): 9. 1896

Protomyces paridis Unger, Die Exanth. 344. 1833.
Polycystis colchici Fries, Summa veg. Scandinaviae 516. 1846.
Tuburcinia trientalis Berk. and Br., Ann. Mag. Nat. Hist. II. 5: 464. 1850.
Polycystis opaca Strauss, in Sturm's Deutschland Fl. 334: 47. 1857. p.p.
Tuburcinia schröteri Wint., Hedwigia 18: 170. 1879.
Sorosporium opacum Wint., Hedwigia 19: 3, 109. 1880. p.p.
Sorosporium paridis Wint., Rabenh. Krypt. Fl. 102. 1881.
Tuburcinia trientalis DeToni, Syllog. Ust. 507. 1888. p.p.

HETEROTHALLISM AND SEX
3266 Woronin 1882 (fusion of sporidia)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3266 Woronin 1882
2655 Schellenberg 1911

MISCELLANEOUS

Morphology and symptons 2655 Schellenberg 1911
Conidial stage = *Ascomyces trientalis* Berk. 1689 Lind 1913
Incidence on *Trientalis latifolia* in Oregon 1338 Jackson 1920
Clamp connections on the mycelium 2732 Seyfert 1927
Type species of Ciferri's genus *Ginanniella,* emend 3069 Ulbrich 1940

SPORE GERMINATION AND FACTORS AFFECTING

3266 Woronin 1882
2329 Plowright 1889
2655 Schellenberg 1911

TUBURCINIA PRIMULICOLA (Magnus) Bref. Unters. Gesammt. Myk. 12: 180. 1897.

Urocystis primulicola Magnus, Verh. Bot. Prov. Brandenb. 20: 50. 1878 and Hedwigia 17: 19. 1879.
Ginanniella primulicola Cif., Fl. Ital. Crypt Ust. Fasc. 17: 152. 1938.

CYTOLOGY

3224 Wilson 1916

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1810 Magnus 1878
2316 Pirotta 1881
1581 Kühn 1882
3255 Wolley 1884
2704 Schröter 1887 (conidial stage)
497 Cocconi 1890
2317 Pirotta 1891
1585 Kühn 1892
315 Brefeld 1895
2655 Schellenberg 1911
1694 Lindau 1912 (conidial stage)
1687 Lind 1913
3224 Wilson 1916
673 Dominik 1936

MISCELLANEOUS

First report from France 954, 955 Godfrin 1891
Morphology and symptoms 2655 Schellenberg 1911
Conidial stage = *Paipalopsis Irmischiae* Kühn 1689 Lind 1913
Formation of clamp connections on the mycelium 2732 Seyfert 1927
Morphology and host range 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

2316 Pirotta 1881
2329 Plowright 1889
497 Cocconi 1890
1585 Kühn 1892
315 Brefeld 1895

1843 Maire and Marguery 1898
2655 Schellenberg 1911

UROCYSTIS AGROPYRI (Preuss) Schröt. Abh. Schles. Ges. Abth. Nat. Med. 1869–72: 7. 1870.

Uredo agropyri Preuss, Linnaea 24: 102. 1851.
Thecaphora occulta Desmazieres, Pl. Crypt. France ed. III. 653. 1859.
Urocystis preussii Kühn, Rabenh., Fungi Europ. 1898. 1874.
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Urocystis ulei Magnus, Rabenh., Fungi Europ. 2390. 1878.
Urocystis occulta var. *tritici* Ellis, N. A. Fungi 293. 1879.
Urocystis alopecuri Frank, Krankheit. Pflanz. 440. 1880.
Urocystis festucae Ule, Verh. Bot. Ver. Prov. Brandenb. 25: 215. 1884.
Urocystis ulei Magnus, in Ule, Verh. Bot. Ver. Prov. Brandenb. 25: 215. 1884.
Tuburcinia agropyri Liro, Ann. Univ. Fenn. Aboen. A. 1: 15. 1922.
Tuburcinia alopecuri Liro, Ann. Univ. Fenn. Aboen. A. 1: 24. 1922.
Tuburcinia poae Liro, Ann. Univ. Fenn. Aboen. A. 1: 22. 1922.
Tuburcinia elynii Cif., Ann. Mycol. 29: 17. 1931.
Tuburcinia avenae-elatioris Kochman. Act. Soc. Bot. Polon. 16: 53–67. 1939.
Urocystis poae Padwick and Agmatulla Khan, Imp. Mycol. Inst. (New Delhi) Mycol. Papers No. 10: 2. 1944.

CULTURE ON ARTIFICIAL MEDIA
2973 Thirumalachar and Dickson 1948
2974 Thirumalachar and Dickson 1949

CYTOLOGY
2973 Thirumalachar and Dickson 1948
2974 Thirumalachar and Dickson 1949

HETEROTHALLISM AND SEX
2973 Thirumalachar and Dickson 1948
2974 Thirumalachar and Dickson 1949

HOST RANGE
786 Fischer 1942
798 Fischer and Holton 1943

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2698 Schröter 1877
2704 Schröter 1887
1689 Lind 1913
1724 Liro 1938
2974 Thirumalachar and Dickson 1949

MISCELLANEOUS
Simultaneous occurrence with *Ustilago hypodytes* (*Ustilago spegazzinii*) on same plants of *Agropyron repens* 1564 Kühn 1874
Morphology and symptoms 2655 Schellenberg 1911
Comparison with *Urocystis bolivari* on *Lolium*. Grasses attacked by *Urocystis agropyri* never produce stems 380, 381 Bubak 1922
Redtop (*Agrostis alba*) new host 601 Davis 1922
Biometric segregates from 467 Ciferri 1931
Host range and morphology 1724 Liro 1938

Urocystis avenae elatioris may be synonym 1511 Kochman 1939
Morphological identity with *Urocystis tritici* 786 Fischer 1942
Further data on the synonomy with *Urocystis tritici* 788 Fischer 1943
Wheat flag smut and grass flag smut only biotypes of one morphologic species 798 Fischer and Holton 1943
Comparative pathogenicity with *Urocystis tritici* and *U. occulta* 798 Fischer and Holton 1943
Timothy (*Phleum pratense*) new host 1546 Kreitlow and Cassell 1945
Comparison (symptoms) with *Ustilago striiformis* 1545 Kreitlow 1948

PHYSIOLOGIC SPECIALIZATION
1724 Liro 1938
1511 Kochman 1939
798 Fischer and Holton 1943

SPORE GERMINATION AND FACTORS AFFECTING
2973 Thirumalachar and Dickson 1948
2974 Thirumalachar and Dickson 1949

UROCYSTIS ALLII Schellenb. Beitr. Krypt. Schweiz 3: 141. 1911.

Urocystis colchici f. *allii-subhirsuti* Beltrani, Thüm., Mycoth. Univ. 1219. 1878.
Tuburcinia allii Liro, Ann. Univ. Fenn. Aboen. A, 1: 50. 1922.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

UROCYSTIS ANEMONES (Pers.) Wint. Rabenh. Krypt. Fl. 1: 123. 1881.

Uredo anemones Pers., Tent. Disp. Method. Fung. 56. 1797.
Uredo ranunculacearum var. *anemones-nemorosae* DC., Fl. France 6: 75. 1815.
Caeoma ranunculacearum Link, in Linne Sp. Pl. 2: 23. 1825. p.p.
Uredo ranunculacearum Chevallier, Fl. envir. Paris 399, 1826. p.p.
Caeoma pompholygodes Schlecht., Linnaea 1: 248. 1826.
Erysibe aritlata var. *ranunculacearum* Wallr., Fl. Crypt. Germ. 2: 211. 1883.
Uredo pompholygodes Rabenh., Krypt. Fl. Handb. 1: 4. 1844.
Polycystis pompholygodes Lev., Ann. Sci. Nat. Bot. III, 5: 270. 1846. p.p.
Polycystis ranunculacearum Fries, Sum. Veg. Scand. 516. 1846.
Polycystis anemones Lev., Ann. Sci. Nat. III, 8: 372. 1847. p.p.
Tuburcinia anemones Liro, Ann. Univ. Fenn. Aboen. A, 1: 55. 1922.
Tuburcinia hepaticae-trilobae (DC.) Liro, Ann. Univ. Fenn. Aboen. A, 1: 59. 1922.

CULTURE ON ARTIFICIAL MEDIA
1500 Kniep 1921 (from smut spore to smut spore in culture)

CYTOLOGY
2231 Paravicini 1917
1500 Kniep 1921
3179 Wang 1934

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2329 Plowright 1889 (as *Urocystis ranunculi*)
1148 Hennings 1903
2655 Schellenberg 1911
321 Brefeld 1912
2231 Paravicini 1917
1500 Kniep 1921
1718 Liro 1922
3068 Ulbrich 1931

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Subdivision of *Urocystis anemones* into species on basis of host restriction 1718 Liro 1922
Clamp connections on the mycelium 2732 Seyfert 1927
Giant forms of host resulting from infection 3068 Ulbrich 1931
Host range and morphology 1724 Liro 1938

PHYSIOLOGIC SPECIALIZATION
1862 Markova 1927

SPORE GERMINATION AND FACTORS AFFECTING
803 Fischer v. Waldheim 1869 (as *Urocystis pompholygodes*)
2329 Plowright 1889 (as *Urocystis ranunculi*)
315 Brefeld 1895 (as *Urocystis ranunculi*)
2655 Schellenberg 1911 (as *Urocystis ranunculi*)
2231 Paravicini 1917
1500 Kniep 1921 (as *Urocystis ranunculi*)

UROCYSTIS BOLIVARI Bubak and Fragoso Bull. Real Soc. Espan. Hist. Nat. 22: 205. 1922.

Tuburcinia bolivari Fragoso, Cif. in Nuovo Giorn. Bot. Ital. n.s. 40, 267. 1933.

MISCELLANEOUS
Technical description and comparison with related species 380, 381 Bubak 1922

UROCYSTIS BRASSICAE Mundkur Phytopath. 28: 141. 1938.

HOST RANGE
2052 Mundkur 1938

MISCELLANEOUS
Technical description and Latin diagnosis. Comparison with *Urocystis coralloides*. 2052 Mundkur 1938

UROCYSTIS CARCINODES (Berk. and Curtis) Fisch. v. Waldh. Apercu Syst. Ust. 38: 1877

Thecaphora carcinodes Berk. and Curtis, Grevillea 3: 58. 1874.
Tuburcinia carcinodes Liro, Ann. Univ. Fenn. Aboen. A, 1: 30. 1922. p.p.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911

UROCYSTIS CEPULAE Frost In Farlow Ann. Rep. Sec. Mass. Board Agric. 24: App. 174. 1877.

Urocystis colchici cepulae Cooke, Gard. Chron. n.s. 7: 735. 1877.
Tuburcinia cepulae Liro, Ann. Univ. Fenn. Aboen. A, 1: 47. 1922.

CONTROL

415 Capron 1870
2953 Taylor 1874
736 Farlow 1877
1846 Malbranche 1881
2712 Scribner 1890
2966 Thaxter 1890
1412 Jones 1891
2967 Thaxter 1891
2880 Sturgis 1893
2881 Sturgis 1896
1032 Halsted 1898
2718 Selby 1900
2758 Sirrine and Stewart 1900
2719 Selby 1902
2856 Stone 1909
2220 Pammel 1912
2857 Stone 1914
3102 Vaughan and Walker 1919
3162 Walker 1919
3163 Walker 1920
142 Barss 1921
902 Gardner 1921
3212 Whitehead 1921
985, 986 Gregory 1922
33 Anderson 1923
37 Anderson and Osmun 1923
3330 Zillig 1923
35 Anderson 1924
38 Anderson and Osmun 1924
2946 Taubenhaus and Mally 1924
21 Alcock *et al.* 1926
2616 Sands 1926
1007 Gussow and Conners 1927
1885 Matzulevitch 1936
323 Bremer 1936
944 Gibbs 1938
756 Felix 1939
2111 Nelson 1939
945 Gibbs *et al.* 1940
2121 Newhall 1940
758 Felix 1941

2122 Newhall 1944
2194 Osmun 1944
676 Doran and Sproston 1945
1952 Miller and McWhorter 1945
2112 Nelson 1946
1715 Linn and Newhall 1948

CULTURE ON ARTIFICIAL MEDIA
32 Anderson 1921
3330 Zillig 1923
3167 Walker and Wellman 1924
232, 233 Blizzard 1926
3168 Walker and Wellman 1926

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32 Anderson 1921
232, 233 Blizzard 1926
722 Evans 1933

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483 Clinton 1904
545 Cotton 1919
3330 Zillig 1923
34 Anderson 1924
36 Anderson 1925

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2958 Taylor 1874
735, 736 Farlow 1877
521, 522, 523 Cooke 1877
524 Cooke 1879
539, 540 Cornu 1879
541 Cornu 1880
2966 Thaxter 1890
1644 Leather 1891
2967 Thaxter 1891
2881 Sturgis 1896
1033 Halsted 1899
2718 Selby 1900
849 Freeman 1905
2220 Pammel 1912
1350 Jagger 1918
32 Anderson 1921
3166 Walker and Jones 1921
3213 Whitehead 1921
3330 Zillig 1923
38 Anderson and Osmun 1924
2946 Taubenhaus and Mally 1924
232, 233 Blizzard 1926
2904 Szembel 1926
3168 Walker and Wellman 1926

1007 Güssow and Conners 1927
1505 Knott 1930
722 Evans 1933
1885 Matzulevitch 1936
944 Gibbs 1938
755 Felix 1938

MISCELLANEOUS

Report of incidence and importance of, in U. S. 3182 Ware 1870
Identical with *Urocystis magica* 736 Farlow 1877
Probable origin 736 Farlow 1877
First report from Europe 540 Cornu 1879
Spore longevity 2966 Thaxter 1890
Historical review 2966 Thaxter 1890
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Budding secondary sporidia produced 3213 Whitehead 1921
History of disease 3213 Whitehead 1921
Questions on the biology and control needing clarification 3330 Zillig 1923
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Taxonomic history 38 Anderson and Osmun 1924
Tuburcinia vs. *Urocystis* 38 Anderson and Osmun 1924
History and geographic distribution 2946 Taubenhaus and Mally 1924
Origin of disease in America 36 Anderson 1925
Infection occurs only at seedling stage 2904 Szembel 1926
Spores survive in soil many years in absence of host 2904 Szembel 1926
Wild onion (*Allium sabulosum*) natural host 2904 Szembel 1926
Simulation of true haustoria 722 Evans 1933
Known in Europe since 1837 1721 Liro 1934
Origin of onion smut in Europe rather than in North America 1721 Liro 1934
Method of determining number of spores in contaminated soil 1885 Matzulevitch 1936
Incidence for first time in New Zealand 944 Gibbs 1938
Host range and morphology 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING

2966 Thaxter 1890
32 Anderson 1921
3213 Whitehead 1921
3330 Zillig 1923
38 Anderson and Osmun 1924
2946 Taubenhaus and Mally 1924

3167 Walker and Wellman 1924
3168 Walker and Wellman 1926

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF
34 Anderson 1924 (suspectibility of species)
36 Anderson 1925
757 Felix 1941
3165 Walker *et al.* 1944 (the hybrid onion *Allium fistulosum*, is source of resistance to onion smut in commercial varieties)

UROCYSTIS COLCHICI (Schlecht.) Rabenh. Fung. Europ. 396. 1861.

Caeoma colchici Schlecht., Linnaea 1: 251. 1826.
Sporisorium colchici Libert, Pl. Crypt. Ard. 194. 1832.
Uredo colchici Link, Handb. Erkennung. Gewäch. 4: 435. 1833.
Erysibe arillata colchici Wallr., Fl. Crypt. Germ. 2: 211. 1833.
Polycystis pompholygodes Lev., Ann. Sci. Nat. Bot. III, 5: 11. 1846. p.p.
Polycystis colchici Strauss, Sturm's Deutschland Fl. 3: 45. 1853.
Tuburcinia colchici Liro, Ann. Univ. Fenn. Aboen. A, 1: 52. 1922.
Tuburcinia scillae Cif., Atti R., Bot. Ist. Univ. Pavia N. S. 1: 79. 1924.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2370, 2371 Prillieux 1880
2655 Schellenberg 1911
1724 Liro 1938

MISCELLANEOUS
Morphology 2655 Schellenberg 1911
Host range and morphology 1724 Liro 1938
Relation to similar species 1724 Liro 1938

SPORE GERMINATION AND FACTORS AFFECTING
2370, 2371 Prillieux 1880

UROCYSTIS CORALLOIDES Rostr. Bot. Centralb. 5: 126. 1881.

Tuburcinia coralloides Liro, Ann. Univ. Fenn. Aboen. A, 1: 86. 1922.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1775 McRae 1926
1961 Mitra 1928
2052 Mundkur 1938

MISCELLANEOUS
Morphology and symptoms 2552 Rostrup 1881
Host range 2052 Mundkur 1938
Morphology and symptoms 2052 Mundkur 1938
Proposed as new species, *Urocystis brassicae* 2052 Mundkur 1938

UROCYSTIS FILIPENDULAE (Tul.) Fuck. Symb. Myc. 1: 5. 1871.

Polycystis filipendulae Tul., Ann. Sci. Nat. Bot. IV, 2: 163. 1854.
Uredo filipendulae Dietrich, Archiv. Nat. Liv-Esth-Kurlands, II, 1: 278. 1859.
Urocystis filipendulae Schröt., Abhandl. Schles. Gesel. Vat. Cult. Abt. Nat. Med. 1869–1871: 7. 1871.
Tuburcinia filipendulae Liro, Ann. Univ. Fenn. Aboen. A, 1: 87. 1922.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2698 Schröter 1877
2655 Schellenberg 1911
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
SPORE GERMINATION AND FACTORS AFFECTING
2698 Schröter 1877
315 Brefeld 1895
2655 Schellenberg 1911

UROCYSTIS FISCHERI Körn. Hedwigia 16: 34. 1877.

Urocystis agropyri Fisch. v. Waldh., Bull. Soc. Nat. Mosc. 40: 258. 1867.
Tuburcinia fischeri Liro, Ann. Univ. Fenn. Aboen. A, 1: 29. 1922.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Host range and morphology 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
2329 Plowright 1889

UROCYSTIS FRASERII Clint. and Zundel N. A. Flora 7(12): 1018. 1939.

MISCELLANEOUS
Comparison with other stem smuts on *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945

UROCYSTIS GALANTHI Pape Arb. Biol. Reichsanst. f. Landw. u. Forstw. 11: 335. 1923

Urocystis colchici (Schlecht.) Rabenh., in Vaumler Verh. Ver. Natur. u. Heilkunde Pressburg, N. F. 7: 38–39. 1891. p.p.
Tuburcinia galanthi Liro, Ann. Univ. Fenn. Aboen. A, 1: 39. 1922.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2226 Pape 1923
MISCELLANEOUS
Technical description 2226 Pape 1923

UROCYSTIS GLADIOLI W. G. Smith Gard, Chron. II, 6: 421. 1876.

Tuburcinia gladioli Liro, Ann. Univ. Fenn. Aboen. A, 1: 37. 1922.

CULTURE ON ARTIFICIAL MEDIA
3197 Wernham 1938
MISCELLANEOUS
Chlamydospores formed on agar germinate same as those formed on host 3197 Wernham 1938
First report from U. S. 3197 Wernham 1938
Morphological distinction from *Papulospora gladioli*, mistaken for *Urocystis gladioli* in the U. S. 1274 Hotson 1942
Macroscopic characters 1682 Limber 1948
SPORE GERMINATION AND FACTORS AFFECTING
3197 Wernham 1938

UROCYSTIS HEPATICAE-TRILOBAE (DC.) Zundel In Ustilaginales of the World

Uredo ranunculacearum var. *hepaticae-trilobae* DC., Fl. France 6: 75. 1815.
Caeoma pompholygodes Schlecht., Linnaea 1: 248. 1826. p.p.
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Urocystis anemones Wint., in Rabenh., Krypt. Fl. 1: 123. 1881. p.p.
Urocystis sorosporioides Maire, Bull. Soc. Mycol. (France) 16: 72. 1900.
Tuburcinia hepaticae-trilobae Liro, Ann. Univ. Fenn. Aboen. A, 1: 56. 1922.
Tuburcinia syncocca Jørstad, Kgl. Norske Vid. Selsk. Skrift. 38: 75. 1935.

CYTOLOGY
1751 Lutman 1910

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1148 Hennings 1903

MISCELLANEOUS
Host range, morphology and comparison with other related species 1724 Liro 1938

PHYSIOLOGIC SPECIALIZATION
1862 Markova 1927

UROCYSTIS HORDEI (Cif.) Zundel In, Ustilaginales of the World

Tuburcinia hordei Cif., Ann. Mycol. 29: 13. 1931.
Urocystis occulta Auct. p.p.

MISCELLANEOUS
Comparison with *Urocystis occulta* 467 Ciferri 1931
Mistaken for *Urocystis occulta in Italy* 467 Ciferri 1931
Technical description n. sp. 467 Ciferri 1931

UROCYSTIS JUNCI Lagerh. Bot. Notiser 1888: 201.

Tuburcinia junci Liro, Ann. Univ. Fenn. Aboen. A, 1: 33. 1922.

MISCELLANEOUS
Morphology 2655 Schellenberg 1911

UROCYSTIS LUZULAE (Schröt.) Wint. Rabenh. Krypt. Fl. 1: 120. 1881.

Polycystis luzulae Schröt., Beitr. Biol. Pflanz. (Cohn) 2: 380. 1877.
Tuburcinia luzulae Liro, Ann. Univ. Fenn. Aboen. A, 1: 36. 1922.

MISCELLANEOUS
Morphology 2655 Schellenberg 1911

UROCYSTIS MIYABEANA Togashi and Onuma Japanese Jour. Bot. 5: 25. 1930.

MISCELLANEOUS
Comparison with *Urocystis colchici, U. jaapiana* and *U. trillii* 3023 Togashi and Onuma 1930

UROCYSTIS OCCULTA (Wallr.) Rabenh. Klotzsch-Rabenh. Herb. Mycol. ed. II. 393. 1865.

Erysibe occulta Wallr., Fl. Crypt Germ. 2: 212. 1833.
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Ustilago occulta (Wallr.) Rabenh., Klotschii Herb. Viv. Myc. 1898; Rab. Handb. 1: 4. 1844.
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Tuburcinia occulta Liro, Ann. Univ. Fenn. Aboen. A, 1: 12. 1922.

CULTURE ON ARTIFICIAL MEDIA
1709 Ling 1940

CONTROL
1364 Jensen 1888
2896 Swingle 1898
2011 Mortensen 1910
2012 Mortensen *et al.* 1910
2013 Mortensen *et al.* 1911
2413 Ravn 1912
1730 Ljung 1913
2033 Müller and Molz 1914
2818 Stakman and Levine 1916
211 Bessey and Makemson 1918
1143 Henning 1919
1144 Henning 1922
2063 Müller and Molz 1922
2816 Stakman and Lambert 1923
1007 Güssow and Conners 1927
3114 Verona 1927
130 Baldrati 1928
971 Gram 1928
973 Gram 1929
1863 Marshner 1931
278 Borghardt 1932
1656 Leszcyenko 1932
1651 Lepik 1933
1704 Lindfors 1934
1657 Leszczenko 1935
1658 Leszczenko 1938

CYTOLOGY
2807 Stakman *et al.* 1934
2820 Stakman *et al.* 1934

HOST RANGE
786 Fischer 1942 (grass hosts)
798 Fischer and Holton 1943

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1929 Meyen 1841
1557 Kühn 1859
3251 Wolff 1873
3252 Wolff 1874
1364 Jensen 1888
990 Grenfell 1901
1124 Hecke 1907 (infection of vegetative parts)
1271 Hori 1907
2818 Stakman and Levine 1916
211 Bessey and Makemson 1918
2674 Schlumberger 1920
2820 Stakman *et al.* 1934
3134 Vilkaitis 1936
1711 Ling and Moore 1937
1709 Ling 1940
1710 Ling 1941

MISCELLANEOUS

Infection of freshly cut vegetative tissues of *Secale montanum* 1124 Hecke 1907
Illness developed from threshing infected rye 1689 Lind 1913
Analysis of changes induced in infected plants 2674 Schlumberger 1920
Comparison with *Urocystis bolivari* on *Lolium* 381 Bubak 1922
Incidence in Russia 2751 Sigriansky 1925
Incidence in Italy 130 Baldrati 1928
First report from S. Africa 3117 Verwoerd 1929
Biometric segregates from 467 Ciferri 1931
Comparison with *Urocystis hordei* 467 Ciferri 1931
In Germany in 1929 1863 Marschner 1931
Supposed infection of wheat really due to *Urocystis tritici*. Comparison with *U. tritici* 224 Biraghi 1933
Smutted culms much shorter than the healthy ones due to shortening of nodes 3134 Vilkaitis 1936
Case of respiratory allergy 3248 Wittich and Stakman 1937
Host range and morphology 1724 Liro 1938
First report from Switzerland 3148 Volkart 1939
As cause of hay fever and asthma 3246 Wittich 1939
Histology of infection of resistant and susceptible varieties 1709 Ling 1940
Relationship to *Urocystis tritici* and *U. agropyri* 788 Fischer 1943
Comparative pathogenicity with *Urocystis agropyri* and *U. tritici* 798 Fischer and Holton 1943
Relationship to *Urocystis agropyri* and *U. tritici*. Cross inoculations. 798 Fischer and Holton 1943

SPORE GERMINATION AND FACTORS AFFECTING

1557 Kühn 1859

3251 Wolff 1873
3252 Wolff 1874
315 Brefeld 1895
1072 Harper 1898
1763 McAlpine 1910
2655 Schellenberg 1911
2818 Stakman and Levine 1916
2820 Stakman *et al.* 1934
1708 Ling 1940

UROCYSTIS ORNITHOGALI Körn. Fisch. v. Waldh., Apercu Syst. Ustil. 41. 1877.

Urocystis hypogea Körn., Fuckel in Symb. Myc. 3: 9. 1876.
Tuburcinia ornithogali Liro, Ann. Univ. Fenn. A, 1: 45. 1922.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Host range and morphology 1724 Liro 1938

UROCYSTIS RANUNCULI-AURICOMI (Liro) Zundel In, Ustilaginales of the World

Uredo ranunculacearum Dietrich, Liv., -u Kur. II, 1: 278. 1856. p.p.
Urocystis pompholygodes Rabenh., in Fisch. v. Waldh. Apercu Syst. Ustil. 40: 1877. p.p.
Urocystis anemones var. *irregularis* Juel, Oversigt. Sv.-Vet.-Akad. Forh. 1894: 496. p.p.
Tuburcinia ranunculi-auricomi Liro, Ann. Univ. Fenn. Aboen. A, 1: 73. 1922.

MISCELLANEOUS
Hosts, morphology and related forms 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
1724 Liro 1938

UROCYSTIS SOROSPORIOIDES Körn. in Fuck., Symb. Myc. 3: 10. 1875.

Tuburcinia sorosporioides Liro, Ann. Univ. Fenn. Aboen. A, 1: 77. 1922.
Tuburcinia aquilegiae Cif., Ann. Mycol. 29: 28. 1931.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2655 Schellenberg 1911
MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
Host range and morphology 1724 Liro 1938
First report from India 2051 Mundkur 1938

UROCYSTIS TRITICI Körn. Hedwigia 16: 33. 1877.

Tuburcinia tritici Liro, Ann. Univ. Fenn. Aboen. A, 1: 17. 1922.

CONTROL
1763 McAlpine 1910
2368 Pridham 1913
585 Darnell-Smith 1914

588 Darnell-Smith and Ross 1919
2381 Putterill 1920
1035 Hamblin 1921
124 Baker 1923
3006, 3007 Tisdale *et al.* 1923
1007 Gussow and Conners 1927
3013 Tisdale *et al.* 1927
3117 Verwoerd 1929
2014 Morwood 1930
2015 Morwood 1931
2279 Petit 1933
43 Angell 1934
613 Dawson 1934
2281 Petit 1935
1409 Jones and El Nasr 1938
2290 Petit 1939
1410, 1411 Jones and El Nasr 1940

CULTURE ON ARTIFICIAL MEDIA
3268 Wu 1949

CYTOLOGY
2152 Noble 1924
224 Biraghi 1934
460 Churchward 1934

HOST RANGE
786 Fischer 1942
798 Fischer and Holton 1943

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910
2249 Peacock 1913
2368 Pridham 1913
585 Darnell-Smith 1914
357 Brittlebank 1920
2381 Putterill 1920
1035 Hamblin 1921
124 Baker 1923
2150 Noble 1923
3006, 3007 Tisdale *et al.* 1923
418 Carne 1924
995, 996 Griffiths 1924
2152 Noble 1924
3013 Tisdale *et al.* 1927
835 Forster and Vasey 1929
3117 Verwoerd 1929
1358 Jarret 1932
731 Faris 1933
932 Geach 1933 (combined action with *Fusarium culmorum* on the occurrence of seedling blight)

42 Angell 1934
460 Churchward 1934
536 Corneli 1934
613 Dawson 1934
1953 Miller and Millikan 1934
45 Angell *et al.* 1937
1956 Millikan and Sims 1937
44 Angell *et al.* 1938
1409 Jones and El Nasr 1938
1954, 1955 Millikan 1939
1410, 1411 Jones and El Nasr 1940
697 El-Helaly 1948
3268 Wu 1949

LONGEVITY OF SPORES

995 Griffiths 1924
3117 Verwoerd 1929
2153 Noble 1934

MISCELLANEOUS

Considered same as *Urocystis occulta* 3251 Wolff 1873
Separation from *Urocystis occulta* as a distinct species on wheat and morphologically distinct from *U. occulta* 1523 Körnicke 1877
Incidence in Australia 489 Cobb 1891
Incidence in Japan 1267 Hori 1901
Incidence in Australia (under name *Urocystis occulta*) 1756 McAlpine 1905
Incidence in Japan 1271 Hori 1907
Comparison with flag smut of rye in symptoms produced 1763 McAlpine 1910
Historical background 1763 McAlpine 1910
Spores viable after passage through alimentary tract of horses and cattle 1763 McAlpine 1910
Substantiation of Körnicke's establishment of *Urocystis tritici* as distinct from *U. occulta*, on basis of cross-inoculation experiments 1763 McAlpine 1910
Incidence of flag smut in crop that was first crop in seven years on same land 1767 McDiarmid 1912
First report from United States 1293 Humphrey and Johnson 1919
Serious incidence in Victoria, Australia 357 Brittlebank 1920
Introduced into United States from Australia 358 Brittlebank 1921
Spores viable after passage through alimentary tract of horses and cattle 1035 Hamblin 1921
Incidence in South Africa 124 Baker 1923
Considerable crop loss in New South Wales in 1922 146 Bartlett 1923
Probably introduced from Australia 3007 Tisdale *et al.* 1923

Incidence in Australia and losses from, 418 Carne 1924
Distribution over the world 995 Griffiths 1924
Sporulation 29 days after inoculation 2152 Noble 1924
Spread in New South Wales by feeding horses straw of infected wheat 477 Clayton 1925
Incidence of and importance in Australia 422 Carne and Limbourn 1927
Manurial treatment increases infection 835 Forster and Vasey 1929
Can live in soil for at least four years 3117 Verwoerd 1929
No adverse effects on chickens 3117 Verwoerd 1929
Prevalence in South Africa 3117 Verwoerd 1929
Soils with high moisture content favorable to disease 3117 Verwoerd 1929
Spores viable after passage through alimentary tract of domestic animals 3117 Verwoerd 1929
Inoculation methods 1358 Jarrett 1932
Comparison with *Urocystis occulta* 224 Biraghi 1933
Incidence in Italy mistaken for *Urocystis occulta* 224 Biraghi 1933
Predisposes to seedling blight (*Fusarium culmorum*) 932 Geach 1933
Predisposes to seedling blight (*Fusarium* spp.) 42 Angell 1934
Recognition of infection by deformation of seedlings 42, 43 Angell 1934
Necrotic spots on inoculated seedlings as evidence of infection 460 Churchward 1934
First report from Cyprus 2090 Nattrass 1934
Serious incidence in Transcaucasia 2906 Szembel 1934
Life history and control in Tasmania 217 Bevin 1936
Significantly reduced development of infected plants 44, 45 Angell *et al.* 1937, 1938
Geographic distribution 1724 Liro 1938
First report from Washington 1112 Heald and Holton 1940
Extent of incidence in Egypt 1410 Jones and El Nasr 1940
Morphologically indistinct from and therefore synonymous with *Urocystis agropyri* 788 Fischer 1943
Comparative pathogenicity with *Urocystis agropyri* and *U. occulta* 798 Fischer and Holton 1943
Pathogenic relationship to *Urocystis agropyri* 798 Fischer and Holton 1943
Imported from United States on straw used as packing for laboratory glassware into Palestine 1958 Minz 1943
First report from Mexico 279 Borlaug *et al.* 1946
First report from Palestine 2419 Rayss and Zwirn 1946
Geographic distribution 2419 Rayss and Zwirn 1946

PHYSIOLOGIC SPECIALIZATION
3117 Verwoerd 1929
3298 Yu *et al.* 1936
2205 Pal and Mundkur 1941
1254 Holton and Johnson 1943
3299 Yu *et al.* 1945

SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910
124 Baker 1923
2150 Noble 1923
995 Griffiths 1924
2152 Noble 1924
3117 Verwoerd 1929
225 Biraghi 1934
1953 Miller and Millikan 1934

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF
2368 Pridham 1913
2452 Reed and Duncan 1920
3006, 3007 Tisdale *et al.* 1923
995, 996 Griffiths 1924
2954 Tehon 1924
3117 Verwoerd 1929
2014 Morwood 1930
2369 Pridham and Dwyer 1930
1686 Limbourn 1931
2015 Morwood 1931
3292 Yu and Chen 1931
1358 Jarrett 1932
3293 Yu *et al.* 1933
536 Corneli 1934
1953 Miller and Millikan 1934
2743 Shen 1934
3296 Yu *et al.* 1934
3298 Yu *et al.* 1936
1956 Millikan and Sims 1937
2205 Pal and Mundkur 1941
3299 Yu *et al.* 1945
697 El-Helaly 1948

UROCYSTIS VIOLAE (Sow.) Fisch. v. Waldh. Bull. Soc. Nat. Mosc. 40: 258. 1867.

Granularia violae Sow., Engl. Fungi pl. 440. 1815.
Uredo vesicaria Kalfuss, Kunze and Schmidt, Myk. 1: 67. 1817.
Erysibe arillata violarum Wallr., Fl. Germ. 2: 211. 1833.
Uredo violarum Berk., in Hooker, Engl. Fl. 5: 380. 1836. p.p.
Polycystis violae Britton and Brown, Ann. Mag. Hist. Nat. II. 5: 464. 1850.
Sorosporium schizocaulon var. *violae* Casp., Klotzsch-Rabenh. Herb. Mycol. Ed. Nova. 190. 1855.

Urocystis vesicaria Brochm., Arch. ver. Freunde Nat. (Mecklenburg) 17: 233. 1863.
Tuburcinia violae Liro, Ann. Univ. Fenn. A. 1: 91. 1922.

CONTROL
1552 Krüger and Rörig 1908
CYTOLOGY
579 Dangeard 1892
2231 Paravicini 1917
2414 Rawitscher 1922
HETEROTHALLISM AND SEX
2231 Paravicini 1917 (sporidial fusions)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1573 Kühn 1876
2370 Prillieux 1880
2575 Roumeguerre 1885
579 Dangeard 1892
3159 Wakker 1892
315 Brefeld 1895
1976 Molliard 1902
2093 Naumann 1905
2655 Schellenberg 1911
2227 Pape 1925 (seed transmission)
MISCELLANEOUS
Pathological histology 579 Dangeard 1892
Pathological morphology and histology 3159 Wakker 1892
Morphology and symptoms 315 Brefeld 1895
Morphology and symptoms 1976 Molliard 1902
Morphology and symptoms 2655 Schellenberg 1911
Seed transmission 2227 Pape 1925
Hosts and morphology 1724 Liro 1938
SPORE GERMINATION AND FACTORS AFFECTING
1573 Kühn 1876
2370 Prillieux 1880
2389 Plowright 1889
579 Dangeard 1892
315 Brefeld 1895
2655 Schellenberg 1911
2231 Paravicini 1917
2414 Rawitscher 1922 (including cytology)

USTACYSTIS WALDSTEINIAE (Peck) Zundel Mycologia 37: 796. 1945

Urocystis waldsteiniae Peck, Ann. Rep. N. Y. State Mus. 46: 112. 1893.
Ustilago waldsteiniae Paz., in Rabenh.-Wint.-Paz., Fungi Europ. 4011. 1895.
Urocystis gei Ell. and Ev., Bull. Torr. Bot. Club 27: 572. 1900.
Whetzelia waldsteiniae (Peck) Zundel, Mycologia 37: 371. 1945.

CYTOLOGY
1070 Hanson and Atkinson 1938

USTILAGO ADOXAE Bref. Untersuch. Gesammt. Myk. 12: 119. 1895.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO AIRAE-CAESPITOSAE (Lindr.) Liro Ann. Acad. Sci. Fenn. A. 17: 71. 1924

Tilletia striaeformis Calkoen, Ured. en Ustil. Nederl. 135. 1883. p.p.
Tilletia striaeformis Rostr., Bot. Foren. Fest. 1890: 148.
Tilletia airae-caespitosae Lindr., Acta Soc. F. F. Fenn. 26: 15. 1904.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1720 Liro 1924

MISCELLANEOUS
History and morphology 1720 Liro 1924

PHYSIOLOGIC SPECIALIZATION
1720 Liro 1924

USTILAGO ANDROPOGONIS-TUBERCULATA Bref. Unters. Gesammt. Myk. 12: 108. 1895

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO ANOMALA J. Kunze. (Fungi Sci. Exs. 23: hyponym 1877); Wint. in Rabenh. Krypt. Fl. 1: 100. 1881.

Ustilago pallida Schröt. in Fisch. v. Waldh., Apercu Syst. Ust. 30. May 1877.
Ustilago carnea Liro, Ann. Soc. zool-bot. Fenn. Venamo 1: 27. 1921.
Ustilago muricata Liro, Ann. Acad. Sci. Fenn. Ser. A. 17: 238. 1924.
Ustilago persicariae Cif., Ann. Mycol. 29: 41. 1931.

CULTURE ON ARTIFICIAL MEDIA
1501 Kniep 1926

HETEROTHALLISM AND SEX
2559 Rostrup 1890 (sporidia fuse)
315 Brefeld 1895 (fusion of sporidia)
2655 Schellenberg 1911 (sporidia do not fuse)
1720 Liro 1924
1501 Kniep 1926

HYBRIDIZATION AND GENETICS
1501 Kniep 1926 (sporidial fusions with other species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911

321 Brefeld 1912

1720 Liro 1924

MISCELLANEOUS

Infected plants of *Polygonum dumetorum* immune from rust, *Puccinia mamillata* 1034 Halsted 1899

Ustilago muricata Liro and *U. persicariae* Cif. are synonyms 1213 Hirschhorn 1947

Variety *carnea* proposed, based on *Ustilago carnea* Liro 1213 Hirschhorn 1947

Polygonum dumetorum var. *apterum* Saelan is merely the morphologically modified plants of *Polygonum dumetorum* due to the smut 1717 Liro 1921

PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924 (including the synonymous species, *Ustilago carnea*)

SPORE GERMINATION AND FACTORS AFFECTING

2698 Schröter 1877

2559 Rostrup 1890

315 Brefeld 1895

2655 Schellenberg 1911

USTILAGO ARABIS-ALPINAE Liro Ann. Acad. Sci. Fenn. A. 42: 507. 1938

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1724 Liro 1938

MISCELLANEOUS

Morphology and symptoms 1724 Liro 1938

USTILAGO ARTHURII Hume Proc. Iowa Acad. Sci. 9: 233. 1902.

Ustilago scolochloae Griff., Bull. Torr. Bot. Club 31: 86. 1904.

MISCELLANEOUS

At least 50 per cent infection on *Scolochloa festucaea* in southeast Oregon 993 Griffiths 1903

USTILAGO AVENAE (Pers.) Rostr. Overs. K. Danske Vid. Selsk. Forh. 1890: 13. March, 1890.

Reticularia segetum Builliard, Hist. Champ., 1791: 90. pl. 472, fig. II. p.p.

Uredo segetum sub. sp. *avenae* Pers., Syn. Fungi. 224. 1801.

Uredo carbo var. *avenae* DC., Fl. Fr. 6: 76. 1815.

Ustilago segetum Link, Ditmar in Sturm's Deutsch. Fl. III, 1: 67. 1817. p.p.

Caeoma segetum Link, in Willdenow, Sp. Pl. 6: 62. 1825. p.p.

Erysibe vera var. *avenae* Wallr., Fl. Crypt. Germ. 2: 217. 1833. p.p.

Uredo carbo-avenae Phillipar, Meni. Soc. Roy. Agric. Arts Seine-et-Oise 37: 194. 1837.

Uredo avenae Corda, Oekonom., Neuigk. und Verh. 1846: 486.

Uredo carbo-vulgaris avenae Tul., Ann. Sci. Nat. Bot. III. 7: 80. 1847.

Ustilago segetum var. *avenae* Jensen, Jour. Roy. Agric. Soc. England II. 24. 407. 1888. (nom, nud.)

Ustilago segetum var. *avenae* Jensen, Charb. Cereales 4. 1889. (nom. nud.)
Ustilago avenae (Persoon) Jensen, in Kellerman and Swingle, Ann. Rept. Kans. Agric. Expt. Sta. 2: 215. June, 1890.
Ustilago avenae f. *folliicola* Almeida, Revista Agron. (Lisbon) 1: 20. 1903.

CONTROL

1447 Kellerman and Swingle 1890
489 Cobb 1891
2223 Pammel and Stewart 1893
263 Bolley 1897
487 Close 1897
2541, 2542 Rommetin 1902
1390, 1391 Johnson 1902
2543 Rommetin 1903
61 Appel and Gassner 1906
2411 Raum 1908
2386 Quanjer and Botjes 1915
1901 Melchers 1916
1186 Hiltner and Lang 1922
1278 Howitt 1922
1279 Howitt and Stone 1922
2307 Pickler and Wober 1922 (use of ultra-violet, X-ray and radium)
641 Dickson *et al.* 1923
1280 Howitt and Stone 1923
1837 Mahner 1923
2504 Ritzema 1923
2602 Sampson 1923
2816 Stakman and Lambert 1923
642 Dickson *et al.* 1924
909 Gassner 1924
1281 Howitt and Stone 1924
3303 Zade 1924
639 Dickson 1925
644 Diehl 1925
2324 Plaut 1925
2760 Skaskin 1925
1659 Leukel 1926
2546 Rosch 1926
703 Englisch 1927
711 Esdorn 1927
1007 Gussow and Conners 1927
2400 Racder and Hungerford 1927
2638 Sayre and Thomas 1927
2914 Tamme 1927
868 Fromme 1928
2639, 2640 Sayre and Thomas 1928
973 Gram 1929

1526 Kosterz 1929
2312 Pierstorff and Sayre 1929
2637 Sayre 1929
1429 Karns 1930
2959 Terenyi 1930
10 Abramoff 1931
2278 Petit 1932
2920 Tapke 1932
1771 McKay 1933
2279 Petit 1933
3287 Young and McClelland 1933
1704 Lindfors 1934
1657 Leszczenko 1935
2018 Morwood 1935
2280, 2281 Petit 1935
2304 Pichler 1935
2305 Pichler 1936
2506 Rivier 1936
2507 Rivier 1938
3288 Young and McClelland 1940
983 Greaney and Wallace 1943
2409 Rapin 1947

CULTURE ON ARTIFICIAL MEDIA

69 Appel and Riehm 1911
821 Fleroff 1923
2517 Rodenhiser 1928
1235 Holton 1931
1313 Hüttig 1931
2124 Nicolaisen 1934
2340 Popp and Hanna 1935
2444 Reed 1936
2614 Sampson and Western 1938
2690 Schopfer and Blumer 1938 (auxo-autotrophic)
3079 Utter 1938
1433 Keil 1940

CYTOLOGY

2231 Paravicini 1917
821 Fleroff 1923
76 Arland 1924
1459 Kharbush 1927
1516 Kolk 1930 (cytology of mycelium in host)
1313 Hüttig 1931
1236 Holton 1932
1314 Hüttig 1933
2124 Nicolaisen 1934

HETEROTHALLISM AND SEX

2231 Paravicini 1917 (copulation between promycelial cells)

1050 Hanna and Popp 1930
1054 Hanna and Popp 1931
1235 Holton 1931
1313 Hüttig 1931
1236 Holton 1932
159 Bauch 1934
2124 Nicolaisen 1934
2340 Popp and Hanna 1935
1241 Holton 1936
3208 Western 1937

HYBRIDIZATION AND GENETICS

1050 Hanna and Popp 1930
1235 Holton 1931
1238 Holton 1933
2124 Nicolaisen 1934
1236 Holton 1935
2340 Popp and Hanna 1935 (with *Ustilago kolleri*)
1240, 1241 Holton 1936 (with buff smut and *Ustilago kolleri*)
24 Allison 1937
2614 Sampson and Western 1938
3079 Utter 1938 (with *Ustilago kolleri*)
797 Fischer and Holton 1941 (inheritance of sorus characters in *avenae* × *perennans*)
1244 Holton 1941
1251 Holton and Fischer 1941 (cross with *Ustilago perennans*)
159 Bauch 1934 (sporidial fusions with multipolar-species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1557 Kühn 1859
1226 Hoffman 1866
3251 Wolff 1873
1562 Kühn 1874
311 Brefeld 1883
1363 Jensen 1888
1447, 1449 Kellerman and Swingle 1890
314 Brefeld 1895
1158 Herzberg 1895
1413 Jones 1896
3046 Tubeuf 1897
479 Clinton 1900
2412 Ravn 1901
3047 Tubeuf 1901
3051 Tubeuf 1902
2547 Rose 1903
1175 Hiltner 1907
707 Eriksson 1908
724 Falck 1908 (first demonstration of formation of dormant mycelium in seed hulls)

1751 Lutman 1910
1763 McAlpine 1910
1615 Lang 1913
3301 Zade 1922 (second demonstration of "blossom" infection and establishment of resting mycelium as source of infection)
145 Bartholomew and Jones 1923 (influence of soil temperature and moisture on infection)
821 Fleroff 1923
76 Arland 1924
3303 Zade 1924
546 Coulson and Lods 1925 (heavier percentage of infection results from smaller seed)
644 Diehl 1925
2163, 2164 Novopokrovsky and Skaskin 1925 (effect of temperature on germination of spores)
2546 Rosch 1926
711 Esdorn 1927
874 Gage 1927
1394 Johnson 1927 (soil moisture, temperature and dehulling)
1973 Moldenhauer 1927
2914 Tamme 1927
2606 Sampson 1929
1516 Kolk 1930
2123 Nicolaisen 1931
77 Arland 1932
3301 Zade and Arland 1933
2124 Nicolaisen 1934
1772 McKay 1936
2445 Reed 1936 (no influence of rate of growth of host on the development of smut)
2925 Tapke 1936
3207 Western 1936
24 Allison 1937
296 Brandwein 1937
1489 Kitunen 1937
1649 Leitzke 1937
297 Brandwein 1938
2446 Reed 1938 (no influence of rate of growth of host on the development of smut)
2614 Sampson and Western 1938
3306, 3307 Zade 1939
2451 Reed 1942

LONGEVITY OF SPORES

1678 von Liebenberg 1879
1361 Jensen 1887
2412 Ravn 1901
2605 Sampson 1928

MISCELLANEOUS

Oat smut segregated from *Ustilago carbo* (*U. segetum*) as *U. avenae*. No distinction made from *Ustilago kolleri*, as yet unrecognized 1367 Jensen 1889

Covered smut recognized as distinct from loose smut and described as variety *Ustilago avenae* var. *levis* 1447 Kellerman and Swingle 1890

Early history 1447 Kellerman and Swingle 1890

Fusarium ustilaginis K. & S. parasitic on, 1447 Kellerman and Swingle 1890

Good history of seed treatment for smut 1447 Kellerman and Swingle 1890

Macrosporium utile parasitic on 1447 Kellerman and Swingle 1890

Three species of beetles (*Phalacrus and Brachytorsus* spp.) which feed on 1447 Kellerman and Swingle 1890

Sporulation in anthers of host 1357 Japp 1907

Effect of ultra-violet and X-rays and radium on germinability of spores 2307 Pichler and Wober 1922

Sporulation in leaves 145 Bartholomew and Jones 1923

Chlamydospores produced in culture 821 Fleroff 1923

Morphological abnormalities induced in *Avena ludoviciana* 2912 Talieff and Grigorovitch 1923

Symptoms, morphology and taxonomic position 76 Arland 1924

Sporulation in leaves 2455 Reed *et al.* 1925

Rapid testing of efficacy of disinfectants 2545 Rosch 1926

Closely similar to but not identical with *Ustilago perennans* 2546 Rosch 1926

Incidence in Ireland 2079 Murphy 1927

Inoculation methods 2914 Tamme 1927

Effect of fertilizers on incidence of 1526 Kosterz 1929

Seedlings from small seed more susceptible than those from large seed 1738 Lods and Coulson 1929

Partial vacuum method of inoculation 1013 Haaring 1930

Use of evacuation method of inoculation for laboratory testing of fungicides 1014 Haaring 1930

Distribution of mycelium in seedlings of various ages 1516 Kolk 1930

One hundred per cent infection from dry spore dusting of dehulled seed 1516 Kolk 1930

Relation of host and pathogene 1516 Kolk 1930

On wild oats, *Avena fatua* 2754 Simmonds 1930

Copper adsorption by spores 2959 Terenyi 1930

Sex segregated independently of cultural characters 1313 Hüttig 1931

Temperature influences type of germination and segregation for sex and other characters 1313 Hüttig 1931

Chemical composition of spores 412 Campanile 1932
Effect on rust development 3196 Welsh 1932
Effect of smut infection on height and tillering 3196 Welsh 1932
Morphological responses of host 3196 Welsh 1932
Smut-infected plants more susceptible to crown rust 3196 Welsh 1932
Injurious effects of latent infection 3305 Zade 1932
Effect of physical and chemical factors on time of reduction division 1315 Hüttig 1933
Buff smut and crosses with *Ustilago avenae* and *U. kolleri* 1238 Holton 1933
Macroscopic morphologic differences between *Ustilago avenae* and *U. kolleri* 1468 Kingsley 1933
Defense of their evacuation method of inoculating 3308 Zade and Arland 1933
Inoculation methods 3308 Zade and Arland 1933
Necrotic spots on inoculated seedlings as evidence of infection 460 Churchward 1934
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
Stimulatory effects of ether 704 Enomoto 1934
Most herbarium specimens at Pusa labelled *Ustilago avenae* were *U. kolleri* 2048 Mundkur 1934
Natural hybridization with *Ustilago kolleri* 2142 Nieves 1934
Inoculation with sporidial cultures 2124 Nicolaisen 1934
Occurrence of sori in leaves 2049 Mundkur 1935
Inoculation with sporidial cultures 2125 Nicolaisen 1935
Longevity of spores; at least 13 years 779 Fischer 1936
Fresh spores germinate less freely 1737 Lobik and Dahlstrem 1936
Sporulation in leaves; high per cent in field 1772 McKay 1936
Ungerminated spores rather than resting mycelium considered source of infection 1772 McKay 1936
Rate of growth of host has almost no effect on development of smut 2445 Reed 1936
Influence of dehulling on the per cent smut resulting from naturally infected seed 2925 Tapke 1936
Five grades of parasitism in resistant varieties 3207 Western 1936
Latent infection not harmful to host. Cytology of latent infection 296 Brandwein 1937
Comparative importance of spores and dormant mycelium in oat hulls as sources of infection 1489 Kitunen 1937
Effect of using spore mixtures 1649 Leitzke 1937
Case of respiratory allergy 3248 Wittich and Stakman 1937
Serological studies 172 Beck 1938
Comparative effectiveness of various inoculation methods 1674 Leukel *et al.* 1938

Rate of growth of host has almost no effect on development of smut 2446 Reed 1938
Growth factors 2690 Schopfer and Blumer 1938
Per cent smut reduced by vernalization of oat seed 2949 Taylor and Coffman 1938
Host specialized races not distinguishable by cultural characters 3079 Utter 1938
Build-up of pathogenicity by successive culturing on same host 3099 Vaughan 1938
As cause of hay fever and asthma 3246 Wittich 1939
Partial vacuum method of inoculation 3306, 3307 Zade 1939
Comparative results of different inoculation techniques 285 Rose and Mundkur 1941
Morphologically indistinct from and therefore synonymous with *Ustilago perennans* and *U. nigra* 788 Fischer 1943
Imported into Palestine from United States on straw used to pack laboratory glassware 1958 Minz 1943
Variable extent of infection obtained in different lots of seed of same variety 2962 Tervet 1944
Twenty-five per cent crop reduction due to, with *Ustilago kolleri* 2409 Rapin 1947

PHYSIOLOGIC SPECIALIZATION

2426 Reed 1924
2603 Sampson 1925
2431 Reed 1927
2513 Rodenhiser 1928
2434 Reed 1929
2606 Sampson 1929
2123 Nicolaisen 1931
2124 Nicolaisen 1934
2125 Nicolaisen 1935
2398 Radulescu 1935
1063 Hansing *et al.* 1936
2458 Reed and Stanton 1936
3099 Vaughan 1938
2448 Reed 1940
2960, 2961 Tervet 1940
2962 Tervet 1944 (necessity of using same lot of seed over period of years in specialization studies)
1062 Hansing *et al.* 1945
1064 Hansing *et al.* 1946
2462 Reed *et al.* 1947
1256 Holton and Rodenhiser 1948

SPORE GERMINATION AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847
311 Brefeld 1883
1447 Kellerman and Swingle 1890

489 Cobb 1891
1158 Herzberg 1895
684 Duggar 1901
1126 Hecke 1909
1763 McAlpine 1910
2655 Schellenberg 1911
2231 Paravicini 1917
1404 Jones 1922
3301 Zade 1922
1405 Jones 1923
2605 Sampson 1928
1313 Hüttig 1931
1315 Hüttig 1933
2124 Nicolaisen 1934
1737 Lobik and Dahlstrem 1936
1489 Kitunen 1937
3208 Western 1937
1433 Keil 1940
1517 Kolk 1943

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

1363, 1365 Jensen 1888
1449 Kellerman and Swingle 1890
1413 Jones 1896
2737 Shamel 1901
3051 Tubeuf 1902
2547 Rose 1903
3316 Zavitz 1909
3317 Zavitz 1914
3106 Valivov 1918
1103 Heald 1919
2423 Reed 1920
2831 Stapledon 1921
2610 Sampson and Davies 1923
2457 Reed and Stanton 1925
2445 Reed *et al.* 1925
2457 Reed and Stanton 1925
2914 Tamme 1927
2513 Rodenhiser 1928
893 Garber *et al.* 1929
2549 Rosenstiel 1929
2606 Sampson 1929
2123 Nicolaisen 1931
2438 Reed 1931
3195 Welsh 1931
2439 Reed 1932
895 Garber and Hoover 1934
2441 Reed 1934

2653 Schattenberg 1934
2825 Stanton *et al.* 1934
2828 Stanton *et al.* 1934
2829 Stanton *et al.* 1934
834 Fomin 1935
2398 Radulescu 1935
2442 Reed 1935
3107 Vears and Macindoe 1935
1063 Hansing *et al.* 1936
2458 Reed and Stanton 1936
229 Blair 1937
1292 Humphrey and Coffman 1937
2078 Murphy *et al.* 1937
2306 Pichler 1937
2459 Reed and Stanton 1937
503 Coffman *et al.* 1938
2460 Reed and Stanton 1938
3152 Voss 1939
285 Bose and Mundkur 1941
3001 Tingey *et al.* 1941
2451 Reed 1942
2461 Reed and Stanton 1942
2827 Stanton and Murphy 1942
2243 Patel 1943
3326 Ziegenbein 1944
1062 Hansing *et al.* 1945
1064 Hansing *et al.* 1946
2462 Reed *et al.* 1947
1256 Holton and Rodenhiser 1948

USTILAGO AVICULARIS Liro Ann. Acad. Sci. Fenn. 17: 18. 1924

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1724 Liro 1924

PHYSIOLOGIC SPECIALIZATION
1724 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
1724 Liro 1924

USTILAGO BETONICAE G. Beck Verh. Zool.-Bot. (Wien) 30: 10. 1881.

Ustilago violacea f. *salviae* Ferraris, Ann. R. Istit. Bot. Roma 9: 190. 1902.
Ustilago betonicae Kirch., Zeitschr. Pflanz. 33: 97. 1923.
Ustilago salviae Cif., Ann. Mycol. 29: 5. 1931. (nom nud.)

CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883

HETEROTHALLISM AND SEX
311 Brefeld 1883

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883
1482 Kirschner 1923
SPORE GERMINATION AND FACTORS AFFECTING
311 Brefeld 1883
1482 Kirschner 1923

USTILAGO BISTORTARUM (DC.) Körn. Hedwigia 16: 38. 1916

Uredo bistortarum pustulata DC., Fl. France 6: 76. 1815.
Caeoma bistortarum Link, in Willd., Sp. Pl. 6: 10. 1825.
Tilletia bullata Fuck., Symb. Mycol. 40. 1869.
Ustilago pustulata Wint., Hedwigia 18: 109. 1880.
Ustilago pustulata Bubak, Archiv. Naturwiss. Landes Böhm. 15: 17. 1916.

HETEROTHALLISM AND SEX
315 Brefeld 1895 (fusion of sporidia)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2655 Schellenberg 1911
MISCELLANEOUS
Morphology and symptoms 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911
Sphacelotheca inflorescentiae Trel. considered synonym 1213 Hirschhorn 1947
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO BOUTELOUAE Kellerm. and Sw. Jour. Mycol. 5: 13. 1899.

MISCELLANEOUS
Morphology and symptoms 1445 Kellerman and Swingle 1889
Comparison with other smuts on *Bouteloua* 472 Ciferri 1934
SPORE GERMINATION AND FACTORS AFFECTING
1445 Kellerman and Swingle 1889
2159 Norton 1896

USTILAGO BOUTELOUAE-HUMILIS Bref. Unters. Gesammt. Myk. 12: 116. 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895
Comparison with other smuts on *Bouteloua* 472 Ciferri 1934
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO BROMIVORA (Tul.) Fisch. v. Waldh., Bull. Soc. Nat. Mosc. 40: 252. 1867.

Ustilago carbo vulgaris bromivora Tul., Ann. Sci. Nat. Bot. III. 7: 81. 1847.
Cintractia patagonica Cooke and Massee, Grevillea 18: 34. 1899. (Type from Patagonia on *Bromus unioloides*).
Ustilago bromivora Tul. forma *brachypodii* Hariot, Bull. Soc. Hist. Nat. Afr. Nord 9: 192. 1921.
Ustilago bromi-arvensis Liro, Ann. Acad. Sci. Fenn. A. 17: 93. 1924.
Ustilago bromi-mollis Liro, Ann. Acad. Sci. Fenn. A. 17: 94. 1924.

CULTURE ON ARTIFICIAL MEDIA (See also under *Ustilago bullata* and *U. lorentziana*)
311 Brefeld 1883
150 Bauch 1925
1501 Kniep 1926
2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)
780 Fischer 1940
1900 Meiners 1947
CONTROL (See also under *Ustilago bullata* and *U. lorentziana*)
1374 Jensen 1893
1375 Jensen 1895
2569 Rostrup 1896
1285 Huergo 1905
1763 McAlpine 1910
2384 Quanjer 1913
59 Appel 1915
1693 Lind 1915
2386 Quanjer and Botjes 1915
973 Gram 1929
2018 Morwood 1935
2735 Simmonds 1936
674 Donald 1939
787 Fischer 1942 (as *Ustilago bullata*)
CYTOLOGY AND SEX (See also under *Ustilago bullata* and *U. lorentziana*)
150 Bauch 1925
HETEROTHALLISM AND SEX (See also under *Ustilago bullata* and *U. lorentziana*)
311 Brefeld 1883
150 Bauch 1925
1501 Kniep 1926
159 Bauch 1934
HOST RANGE (See also under *Ustilago bullata* and *U. lorentziana*)
780 Fischer 1937
HYBRIDIZATION AND GENETICS (See also under *Ustilago bullata* and *U. lorentziana*)
1501 Kniep 1926 (sporidial fusions with other species)
159 Bauch 1934 (sporidial fusions with multipolar species)
793 Fischer 1948 (with *Ustilago hordei*)
794 Fischer 1948 (with *Ustilago striiformis*)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING (See also under *Ustilago bullata* and *U. lorentziana*)
1557 Kühn 1859
1562 Kühn 1874
311 Brefeld 1883
314 Brefeld 1888
1975 Molliard 1898

502 Cocconi 1904
1763 McAlpine 1910
1720 Liro 1924
150 Bauch 1925
506 Cohen 1946

MISCELLANEOUS (See also under *Ustilago bullata* and *U. lorentziana*)

Morphology and symptoms 311 Brefeld 1883
Possible toxicity to cattle 2556 Rostrup 1889
Possible toxicity to cattle 2562 Rostrup 1890
Possible toxicity to cattle 2567 Rostrup 1893
Causing floral proliferation in *Bromus erectus* 1975 Molliard 1898
Seed crop in mountain brome and cheat (*Bromus marginatus* and *B. secalinus*) very materially reduced in western states 993 Griffiths 1903
Smutty prairie grass (*Bromus catharticus*) unsuitable for fodder 494 Cobb 1904
Extreme prevalence in Australia 1763 McAlpine 1910
Spores retain viability at least 2½ years 1763 McAlpine 1910
Smut beetle, *Phalacrus corruscus* (Panz.) Everts, feeds upon the sori 2384 Quanjer 1913
History, host range and morphology 1720 Liro 1924
Longevity of spores; as much as 10 years 779 Fischer 1936
Comparative morphology with *Ustilago lorentziana* and *U. bullata* with which species consolidation is recommended 780 Fischer 1937
Growth factors 2690, 2691 Schopfer and Blumer 1938
Comparative morphology on *Bromus* spp. in Argentina 1191 Hirschhorn 1939
First report from Romania (on *Bromus tectorum*) 2631 Savulescu 1940

PHYSIOLOGIC SPECIALIZATION (See also under *Ustilago bullata* and *U. lorentziana*)

1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING (See also under *Ustilago bullata* and *U. lorentziana*)

311 Brefeld 1883
2329 Plowright 1889
716 Essmond 1893
2318 Pitzorno 1893
501 Cocconi 1903
1763 McAlpine 1910
2384 Quanjer 1913
1720 Liro 1924
150 Bauch 1925
780 Fischer 1937

1517 Kolk 1943
506 Cohen 1946

USTILAGO BULGARICA Bubak Zeitschr. Landw. Versuchs. Österr. 1910: 53. 1910

CONTROL
278 Borghardt 1932

MISCELLANEOUS
Morphology, symptoms and comparison with other sorghum smuts
379 Bubak 1910

USTILAGO BULLATA Berk., in Hooker Fl. New Zealand 2: 196. 1855.

Ustilago agropyri Bisby and Buller, Trans. Brit. Mycol. Soc. 8: 98. hyponym. 1922.

CONTROL (See also under *Ustilago bromivora* and *U. lorentziana*)
846 Fraser and Scott 1926
1007 Güssow and Conners 1927
973 Gram 1929
2018 Morwood 1935
2753 Simmonds 1936
1153 Henry *et al.* 1938
674 Donald 1939
787 Fischer 1942

CULTURE ON ARTIFICIAL MEDIA (See also under *Ustilago bromivora* and *U. lorentziana*)
315 Brefeld 1895
784 Fischer 1940
1900 Meiners 1947

HETEROTHALLISM AND SEX (See also under *Ustilago bromivora* and *U. lorentziana*)
1501 Kniep 1926
784 Fischer 1940

HOST RANGE (See also under *Ustilago bromivora* and *U. lorentziana*)
780 Fischer 1937

HYBRIDIZATION AND GENETICS (See also under *Ustilago bromivora* and *U. lorentziana*)
1501 Kniep 1926 (incomplete hybrid with *Ustilago hordei* and *U. perennans*)
793 Fischer 1948 (with *Ustilago hordei*)
794 Fischer 1948 (with *Ustilago striiformis*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING (See also under *Ustilago bromivora* and *U. lorentziana*)
1763 McAlpine 1910
846 Fraser and Scott 1926
1007 Güssow and Conners 1927

2202 Padwick and Henry 1935
784 Fischer 1940

MISCELLANEOUS (See also under *Ustilago bromivora* and *U. lorentziana*)

Incidence on slender wheat grass in Canada 846 Fraser and Scott 1926

Incidence on slender wheatgrass near Omsk. Similar to *Ustilago turcomanica* 2025 Mourashkinsky 1926

Smut on *Bromus unioloides* responsible for fatal injury to sheep and contagious abortion in horses 1855 Marchionatto 1930

Incidence in seed samples of *Bromus arvensis* 677 Dorph-Petersen 1931

Longevity of spores; at least three years 779 Fischer 1936

Comparative morphology with *Ustilago bromivora* and *U. lorentziana* with which consolidation is recommended 780 Fischer 1937

Host range 780 Fischer 1937

Morphological comparison with *Ustilago lorentziana* and *U. bromivora* 780 Fischer 1937

Haplo-lethal deficiency operative against saprophytism 784 Fischer 1940

Comparative morphology germinating spores in races in Argentina 1196 Hirschhorn 1941

PHYSIOLOGIC SPECIALIZATION (See also under *Ustilago bromivora* and *U. lorentziana*)

785 Fischer 1940
1548 Kreizinger *et al.* 1947

SPORE GERMINATION AND FACTORS AFFECTING (See also under *Ustilago bromivora* and *U. lorentziana*)

315 Brefeld 1895
1763 McAlpine 1910
2202 Padwick and Henry 1935
780 Fischer 1937
1196 Hirschhorn 1941
796 Fischer and Hirschhorn 1945

VARIETAL RESISTANCE AND SUSCEPTIBILITY (See also under *Ustilago bromivora* and *U. lorentziana*)

674 Donald 1939 (*Bromus catharticus*)
2234 Parker 1942 [in *Bromus catharticus* (*unioloides*)]
1548 Kreizinger *et al.* 1947 (in *Bromus marginatus* and *Elymus canadensis*)

USTILAGO CALAMAGROSTIDIS (Fuck.) Clint. Jour. Mycol. 8: 138. 1902.

Tilletia calamagrostis Fuck., Sym. Myc. 40. 1869.
Tilletia calamagrostidis Schröt., Pilze, Schles. 1: 279. 1887.
Ustilago scorbiculata Liro, Ann. Acad. Sci. Fenn. A, 17: 68. 1924.

MISCELLANEOUS
Smutted plants probably injurious to livestock 576 Dammann 1892
Host range, morphology and historical background 1720 Liro 1924

USTILAGO CALANDRINIAE Clint. Proc. Boston Soc. Nat. Hist. 31: 378. 1904

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910
MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910
SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910

USTILAGO CALCARA Griff. Bull. Torr. Bot. Club 31: 85. 1904.

MISCELLANEOUS
Comparison with other smuts on *Bouteloua* 472 Ciferri 1934

USTILAGO CARDUI Fisch. v. Waldh. Bull. Soc. Nat. Moscow 40 (1): 14. 1867.

Ustilago reesiana Kühn, Rabenh., Fungi Europ. 1798; 1799. 1874.

CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883
1501 Kniep 1926
HETEROTHALLISM AND SEX
311 Brefeld 1883 (fusion of sporidia and development of infection hyphae)
1501 Kniep 1926
HYBRIDIZATION AND GENETICS
1501 Kniep 1926 (sporidial fusions with other species)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883
MISCELLANEOUS
Symptoms and morphology 2655 Schellenberg 1911
Hosts and morphology 1720 Liro 1924
SPORE GERMINATION AND FACTORS AFFECTING
311 Brefeld 1883
1565 Kühn 1874
1720 Liro 1924

USTILAGO CICHORII Sydow Ann. Mycol. 27: 713. 1929.

HETEROTHALLISM AND SEX
2898 Sydow 1929 (fusion of sporidia)
MISCELLANEOUS
Technical description and Latin diagnosis 2898 Sydow 1929
SPORE GERMINATION AND FACTORS AFFECTING
2898 Sydow 1929

USTILAGO COICIS Bref. Unters. Gesammt. Myk. 12, p. 110. 1896.

CONTROL
447 Chowdbury 1946

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895
447 Chowdbury 1946

MISCELLANEOUS
Morphology 315 Brefeld 1895
Morphology 2394 Raciborski 1900
First report from U. S. (from seed imported from Philippine Islands) 2977 Thomas 1920

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
2394 Raciborski 1900
447 Chowdbury 1946

USTILAGO COMBURENS Ludwig Zeitschr. Pflanz. 3: 130. 1893.

Ustilago microspora Massee and Rodway, Kew Bull. 1901: 160.
Ustilago exigua Sydow, Ann. Mycol. 1: 177. 1903.

MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910
Epidemic on *Danthonia pilosa* in New Zealand 2235 Parlane 1929
First report on *Danthonia pilosa* for New Zealand 2235 Parlane 1929
Irritation of mucous membrane of nose in sheep caused by in New Zealand 2235 Parlane 1929

SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910
2235 Parlane 1929

USTILAGO CONSIMILIS Sydow Ann. Mycol. 22: 281. 1924.

MISCELLANEOUS
Comparison with other smuts on *Saccharum* and *Erianthus* 2897 Sydow 1924
Comparison with other sugar-cane smuts 2054 Mundkur 1939
Comparison with other sugar-cane smuts 1198 Hirschhorn 1941

USTILAGO CORTADERIAE Grodsinsky. Physis 12 (43): 173. 1936. (nom. nud.) Darwinia 3: 368–369. 1939.

MISCELLANEOUS
Morphology, symptoms and Latin diagnosis 1191 Hirschhorn 1939

USTILAGO CRAMERI Körn. In Fuckel, Jahrb. Nass. Ver. Naturk. 27–28: 11. 1873.

CULTURE ON ARTIFICIAL MEDIA
3174 Wang 1938

CONTROL
1901 Melchers 1916

3097 Vasey 1918
2883 Sundararaman 1921
270 Bolley and Brentzel 1927
1007 Güssow and Melchers 1927
1905 Melchers 1927
1914, Melchers and Johnston 1927
2343 Porter *et al.* 1928
2628 Savoff 1928
2858, 2859 Stone 1928
278 Borghardt 1932
3294 Yu *et al.* 1934
3176 Wang 1944

CYTOLOGY
3174 Wang 1938
3175 Wang 1943

HETEROTHALLISM AND SEX
311 Brefeld 1883 (fusions between cells of promycelium)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1121 Hecke 1905
1271 Hori 1907
3097 Vasey 1918
2883 Sundararaman 1921
473 Ciferri 1938

MISCELLANEOUS
Morphology 311 Brefeld 1883
Spores disseminated by beetle (*Phalacrus politus*) 3097 Vasey 1918
Longevity of spores; at least four years 779 Fischer 1936
Longevity of spores (as much as 64 years) 3173 Wang 1936
Case of respiratory allergy 3248 Wittich and Stakman 1937
Chlamydospores produced in culture have normal morphology and germination 3174 Wang 1938
Morphology and symptoms 1191 Hirschhorn 1939
As cause of hay fever and asthma 3246 Wittich 1939

PHYSIOLOGIC SPECIALIZATION
3289 Yu 1937 (evidence of)
3176 Wang 1944 (six races)

SPORE GERMINATION AND FACTORS AFFECTING
3056 Tulasne 1847
3252 Wolff 1874
311 Brefeld 1883
2655 Schellenberg 1911
3173 Wang 1936

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF
2342 Porter *et al.* 1930
3045 Tu and Li 1935
3289 Yu 1937

3292 Yu 1942
3176 Wang 1944

USTILAGO CRUS-GALLI Tracy and Earle Bull. Torr. Bot. Club 22: 175. 1895.

Cintractia seymouriana P. Magnus, Ber. Deutschen Bot. Ges. 14: 217. 1896.
Cintractia crus-galli P. Magnus, Ber. Deutschen Bot. Ges. 14: 392. 1896.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1827 Magnus 1896
1763 McAlpine 1910

MISCELLANEOUS
Pathological histology 1827 Magnus 1896
Symptoms and morphology 1763 McAlpine 1910
Incidence and importance in India on *Echinochloa frumentacea* 2057 Mundkur 1943
Revised description 2057 Mundkur 1943

USTILAGO CYNODONTIS (Pass.) P. Henn. Bot. Jahrb. (Engler) 14: 369. 1891.

Ustilago carbo var. *cynodontis* Pass., Erb. Critt. Ital., ser. 2, 450. 1871, and Nuovo Giorn. Bot. Ital. 9: 236. 1877.
Ustilago cynodontis Curzi, Istit. Bot. Univ. Pavia and Lab. Critt. Univ. Pavia 3: 153. 1927.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895
1830 Magnus 1899
1763 McAlpine 1910
2655 Schellenberg 1911
1899 Mehta 1923
506 Cohen 1946

MISCELLANEOUS
Morphology 315 Brefeld 1895
Historical background and comparison with other species on *Cynodon* 1830 Magnus 1899
Longevity of spores; at least 5 years 779 Fischer 1936
Differentiation from *Ustilago paraguariensis* 3349 Zundel 1939

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
1763 McAlpine 1910
2655 Schellenberg 1911
506 Cohen 1946

USTILAGO DAVISI Liro Ann. Acad. Sci. Fenn. 17: 80. 1924.

Ustilago longissima var. *macrospora* Davis, Trans. Wisc. Acad. Sci. Arts 11: 174. 1897.

CULTURE ON ARTIFICIAL MEDIA
1501 Kniep 1926
1428 Kammerling 1929
CYTOLOGY
149 Bauch 1923
HETEROTHALLISM AND SEX
149 Bauch 1923
1501 Kniep 1926
1428 Kammerling 1929
HYBRIDIZATION AND GENETICS
1501 Kniep 1926 (sporidial fusions with other species)
1428 Kammerling 1929 (with *Ustilago longissima*)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
149 Bauch 1923
1428 Kammerling 1929
MISCELLANEOUS
Simultaneous occurrence with *Ustilago longissima* in same collection and even same plant 151 Bauch 1926
Simultaneous occurrence with *Ustilago longissima* in same collection and even same plant 1428 Kammerling 1929
SPORE GERMINATION AND FACTORS AFFECTING
1428 Kammerling 1929

USTILAGO DOMESTICA Bref. Unters. Gesammt. Myk. 12: 135. 1895.

HETEROTHALLISM AND SEX
315 Brefeld 1895 (sporidial fusions)
MISCELLANEOUS
Morphology 315 Brefeld 1895
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO DURIAEANA Tul. Ann. Sci. Nat. Bot. III, 7: 105. 1847.

Ustilago ducellieri Maire, Bull. Soc. Hist. Afr. Nord. 8: 140. 1917. (On *Avenaria serpyllifolia* L.)

HETEROTHALLISM AND SEX
315 Brefeld 1895 (fusion of sporidia while still attached to promycelium)
MISCELLANEOUS
Hosts and morphology 1720 Liro 1924
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO ECHINATA Schröt. Abh. Schles. Ges. Abth. Nat. Med. 1869–72: 4. 1870.

Caeoma longissimum Dozy and Molkenboer, pp., Tidsskr. Nat. Gesch. Phys. 11: 407. 1884.

Ustilago verrucosa Vestergren, Jahreskat. Wiener Krypt. Tausch. 3: 1897. (Type from Sweden on *Baldingera arundinacea*). Not *Ustilago verrucosa* Schröt. 1896.
Ustilago baldingerae Vestergren, in Scheduleae.
Ustilago vestergreni Sacc. and Sydow, Sacc. Syll. Fung. 14: 413. 1899.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2190 Orth 1880
315 Brefeld 1895
2872 Strohmeyer 1896

MISCELLANEOUS
Suspected of causing abortion in cows 2191 Orth 1881
Suspected of causing abortion in cows 576 Dammann 1892
Symptoms and morphology 2655 Schellenberg 1911
Unusual distorting effect on inflorescence in Michigan 188 Benedict 1929

SPORE GERMINATION AND FACTORS AFFECTING
313 Brefeld 1888

USTILAGO ENGENULA Sydow and Butler Ann. Mycol. 10: 251. 1912.

MISCELLANEOUS
Morphology and symptoms 2903 Sydow and Butler 1912

SPORE GERMINATION AND FACTORS AFFECTING
2903 Sydow and Butler 1912

USTILAGO ESCULENTA P. Henn. Hedwigia 34: 10. 1895.

CONTROL
2197 Ou 1938

MISCELLANEOUS
Used by women in Japan as eyebrow pencil and as dye for greying hair 1967 Miyabe 1895
Morphology 1967 Miyabe 1895
Comparison (morphological) between Japanese and Formosan specimens 1272 Hori 1907
Spores are *echinulate* rather than smooth 1272 Hori 1907
The unripe smut is a table delicacy 1272 Hori 1907
First report from U. S. 2246 Patterson 1912
Highly prized as food in Japan 1432 Kawagoe 1925
Method of cultivation for food 1432 Kawagoe 1925

SPORE GERMINATION AND FACTORS AFFECTING
1272 Hori 1907
3282 Yen 1938 (in various media)

USTILAGO GLOBIGENA Speg. Anal. Mus. Nac. Buenos Aires 6: 208. 1899.

MISCELLANEOUS
Comparative morphology with *Ustilago sphaerogena* 1191 Hirschhorn 1939

USTILAGO GOEPPERTIANA Schröt. Krypt. Fl. Schles. 31: 272. 1889.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2704 Schröter 1887
315 Brefeld 1895
1720 Liro 1924

MISCELLANEOUS
Symptoms and morphology 2655 Schellenberg 1911
History and morphology 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO GRANDIS Fries Syst. Mycol. 3: 518. 1829.
Erysibe typhoides Wallr., Flora Crypt Germ. 2: 215. 1833.
Ustilago typhoides Berk. and Br., Ann. Mag. Nat. Hist. ser. 2, 5: 465. 1850.

CULTURE ON ARTIFICIAL MEDIA
1501 Kniep 1926

CYTOLOGY
2732 Seyfert 1927

HETEROTHALLISM AND SEX
150 Bauch 1925
159 Bauch 1934
1501 Kniep 1926

HYBRIDIZATION AND GENETICS
1501 Kniep 1926 (sporidial fusions with other species)
159 Bauch 1934 (sporidial fusions with multipolar species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883
2559 Rostrup 1890
845 Frank 1896
647 Dietel 1897
322 Brefeld and Falk 1905
1714 Linkola 1910
2655 Schellenberg 1911
321 Brefeld 1912
1689 Lind 1913
150 Bauch 1925

MISCELLANEOUS
Symptoms and morphology 2655 Schellenberg 1911
History and morphology 1720 Liro 1924
Formation of clamp connection on the mycelium 2732 Seyfert 1927
Distribution 1094 Häyren 1932
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
Stimulatory effects of ether 704 Enomoto 1934

SPORE GERMINATION
1575 Kühn 1877
311 Brefeld 1883
2329 Plowright 1889
1720 Liro 1924
150 Bauch 1925

USTILAGO HALOPHILA Speg. Anal. Mus. Buenos Aires III, 1: 58. 1902.

Ustilago hypodytes (Schlecht.) Fr. Syst. Myc. 3: 518. 1822 in part.
Cintractia distichlidis McAlp., Smuts of Austr. 169. 1910.

CYTOLOGY
1211 Hirschhorn 1945
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910 (as *Cintractia distichlidis*)
MISCELLANEOUS
Report on prevalence in western states (under name of *Ustilago hypodites*) 993 Griffiths 1903
Symptoms and morphology (as *Cintractia distichlidis*) 1763 McAlpine 1910
Position in "*Ustilago hypodytes*" complex; comparison with other spp. *Ustilago* causing stem smut; geographic distribution 795 Fischer and Hirschhorn 1945
SPORE GERMINATION
1763 McAlpine 1910 (as *Cintractia distichlidis*)
1517 Kolk 1943 (as *Ustilago hypodytes*)
795, 796 Fischer and Hirschhorn 1945

USTILAGO HEUFLERI Fuck. Symb. Mycol. 39. 1869.

Caeoma tulipae Heufler, in Litt.
Urocystis pompholygodes f. *tulipae* Rabenh., Fungi Europ. No. 1099. 1866.
Ustilago erythronii Clint., in Peck Bull. Buffalo Nat. Sci. 1: 67. 1873.
Ustilago tulipae Wint., Rabenh. in Krypt. Fl. 1: 86. 1881.
Ustilago ornithogali f. *erythronii* DeToni, in Sacc. Syll. Fung. 7: 452. 1888.

CULTURE ON ARTIFICIAL MEDIA
2621 Sartoris 1924
CYTOLOGY
2621 Sartoris 1924
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2621 Sartoris 1924
MISCELLANEOUS
Completion of life cycle on artificial media 2621 Sartoris 1924
SPORE GERMINATION AND FACTORS AFFECTING
2621 Sartoris 1924

USTILAGO HIERONYMI Schröt. Hedwigia 35: 238. Aug. 1, 1896.

Ustilago filifera Norton, Trans. Acad. Sci. St. Louis 7: 237. Nov. 9, 1896.

MISCELLANEOUS

Comparison with other smuts on *Bouteloua* 472 Ciferri 1934

SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

USTILAGO HOLOSTEI DeBary Jahrb. Wissen. Bot. 7: 105. 1869.

HETEROTHALLISM AND SEX

315 Brefeld 1895 (fusion of sporidia)

MISCELLANEOUS

Morphology and symptoms 315 Brefeld 1895

Morphology and symptoms 2655 Schellenberg 1911

SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

USTILAGO HORDEI (Pers.) Lagerh. Mitteil. d. Badischen Bot. Ver. 70. 1889.

Uredo segetum subsp. *hordei* Pers., Synop. Fung. 224. 1801.
Uredo carbo var. *hordei* DC., Fl. France 6: 76. 1815. p.p.
Ustilago segetum Link, Ditmar in Sturm's Deutschland Fl. III, 1: 67. 1817 p.p.
Caeoma segetum Link in Wildenow, Sp. Pl. 6: 1. 1825. p.p.
Erysibe vera hordei Wallr., Fl. Crypt. Germ. 2: 217. 1833.
Uredo carbo-hordei Philippar., Mem. Soc. Roy. Agr. Arts Seine-et-Oise 37: 195. 1837.
Ustilago carbo vulgaris hordeacea Tul., Ann. Sci. Nat. Bot. III, 7: 80. 1847.
Ustilago segetum subsp. *hordei* Rabenh., Herb. Mycol. Ed. II, 397. 1856.
Ustilago segetum var. *hordei* f. *tecta* Jensen, Oru Korns. Brand. 61: 1888.
Ustilago segetum subspecta Jensen, Jour. Roy. Agric. Soc. England II, 24: 406. 1888.
Ustilago segetum var. *tecta* Jensen, Charb. Cereals 4: 1889.
Ustilago tecta hordei Jensen, Ann. Rept. Kans. Agric. Expt. Sta. 2: 269. 1890.
Ustilago jensenii Rostr., Overs. Kong. Danske. Vid. Selsk. Forh. 1890: 12. March 1890.
Ustilago hordei Kell. and Sw., Ann. Rept. Kans. Agric. Expt. Sta. 2: 268. June, 1890.

CONTROL

1363, 1364 Jensen 1888
1447 Kellerman and Swingle 1890
1137 Henderson 1898
2386 Quanjer and Batjes 1915
1901 Melchers 1916
2596 Salmon and Wormald 1918
223 Binz and Bausch 1922 (Ehrlich's application of chemotherapeutical index works for vegetable pathology, according to results with *Ustilago hordei*)
1143 Henning 1919
1144 Henning 1922
2307 Pichler and Wober 1922 (use of ultra-violet, X-rays and radium)
2602 Sampson 1923
2816 Stakman and Lambert 1923

3021 Tisdale, Taylor and Griffiths 1923
911 Gassner 1925
1659 Leukel 1926
2469 Reichert 1926 (sulphur dust inferior to other dusts)
2580 Rump 1926
270 Bolley and Brentzel 1927
824 Flor 1927
1007 Güssow and Conners 1927
1463 Kiesselbach 1927
2341 Porter 1928
516 Conners 1929
1660 Leukel 1929
2344 Porter *et al.* 1929
1661 Leukel 1930
1662 Leukel 1930 (comparative advantages and disadvantages of dusts and liquids as fungicides)
2951 Taylor and Zehner 1930
2016 Morwood 1932
2103 Neill 1932
2278 Petit 1932
2279 Petit 1933
1164 Hewlett and Hewlett 1934
1407 Jones 1934
2017 Morwood 1934
2018 Morwood 1935
2280, 2283 Petit 1935
2304 Pichler 1935 (hydrogen peroxide inadequate)
1664 Leukel 1936
2753 Simmonds 1936
1409 Jones *et al.* 1938
1672 Leukel and Nelson 1939
2288, 2289, 2290 Petit 1939
1410 Jones and El Nasr 1940
3288 Young and McClelland 1940
983 Greaney and Wallace 1943
3149 Volosky de Hernandex 1945
2582 Russell 1946 (centrifuge testing of seed to determine if contains enough spores to warrant treatment)

CULTURE ON ARTIFICIAL MEDIA

1158 Herzberg 1895 (as *Ustilago jensenii*)
68 Appel and Riehm 1911
1172 Hils 1912
820 Fleroff 1919
821 Fleroff 1923
2621 Sartoris 1924
1501 Kniep 1926
2580 Rump 1926

2647 Schaffnit 1926
2513 Rodenhiser 1928
1313 Hüttig 1931
3178 Wang 1932
2586, 2587 Ruttle 1934
2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)
1433 Keil 1940

CYTOLOGY
2231 Paravicini 1917
2580 Rump 1926
633 Dickinson 1927
1459 Kharbush 1927
1313 Hüttig 1931
3178 Wang 1932
24 Allison 1937

HETEROTHALLISM AND SEX
2231 Paravicini 1917 (copulation between sporidia)
1501 Kniep 1926
1313 Hüttig 1931
159 Bauch 1934
2586, 2587 Ruttle 1934
1988 Moor and Allison 1935 (two sex groups in albino strains)
24 Allison 1937

HOST RANGE
1347 Jaczewski 1925 (on rye in Siberia)
781 Fischer 1939 (on grasses)

HYBRIDIZATION AND GENETICS
634 Dickinson 1926 (incomplete hybridization with *Ustilago kolleri,* i.e., infection, but not carried to chlamydospore production)
1501 Kniep 1926 (sporidial fusions with other species)
159 Bauch 1934 (sporidial fusions with multipolar species)
2587 Ruttle 1934 (with smut intermediate between *Ustilago nigra* and *U. nuda*)
23 Allison 1935
24 Allison 1937 (with *Ustilago nuda,* unsuccessful)
24 Allison 1937 (with *Ustilago avenae, U. tritici,* and *U. kolleri* unsuccessful—only sporidial fusions)
1300 Hungerford 1938 (with *Ustilago nigra*)
213 Bever 1942 (a buff-colored, nonpathogenic F_3 segregate from cross with *Ustilago nigra*)
2937 Tapke 1944 (natural hybridization between races)
215 Bever 1945 (with *Ustilago nigra*)
793 Fischer 1948 (with *Ustilago bullata*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1929 Meyen 1841
1226 Hoffman 1866

803 Fischer v. Waldheim 1869
3252 Wolff 1874
1363 Jensen 1888
1447 Kellerman and Swingle 1890
1158 Herzberg 1895
318 Brefeld 1903
2547 Rose 1903
319 Brefeld 1907
1271 Hori 1907
851 Freeman and Johnson 1909
1763 McAlpine 1910
2655 Schellenberg 1911
321 Brefeld 1912
1172 Hils 1912
230 Blaringhem 1923
1618 Lang 1923
3002 Tisdale 1923
728 Faris 1924
2163 Novopokrovsky and Skaskin 1925
176 Beck 1926
2580 Rump 1926
2647 Schaffnit 1926
634 Dickinson 1927
1661 Leukel 1930
2952 Taylor and Zehner 1931
3085 Vanderwalle 1932
2586, 2587 Ruttle 1934
4 Aamodt and Johnson 1935
24 Allison 1937
1409 Jones and El Nasr 1938
1599 Kutzevol 1938
2931, 2932 Tapke 1940

MISCELLANEOUS

Comparative effectiveness of inoculation methods 2942 Tapke and Bever 1942
Differentiation from *Ustilago nuda* and other early data 1363 Jensen 1888
Simultaneous incidence with *Ustilago nuda* in same plant 1363 Jensen 1888
Excellent early history 1447 Kellerman and Swingle 1890
Chlamydospores in culture 820 Fleroff 1919
Effect of ultra-violet and X-rays on germinability 2307 Pichler and Wober 1922
Development of chlamydospores in culture 821 Fleroff 1923
Confusion with *Ustilago nuda* on symptomology 1618 Lang 1923
Effect of dehulling on per cent infection 3002 Tisdale 1923
Inoculation method 3002 Tisdale 1923

Sporulation in leaves 728 Faris 1924
Hosts, history and morphology 1720 Liro 1924
Development of chlamydospores in culture 2621 Sartoris 1924
Completion of life cycle on artificial media 2621 Sartoris 1924
Inoculation experiments 176 Beck 1926
Development of chlamydospores in culture 2580 Rump 1926
Production of chamydospores on agar and which germinate normally 2580 Rump 1926
Spores retain viability at least 5 years 2580 Rump 1926
Sporidia viability on malt agar 7 weeks; 4–7 months in damp chamber 2580 Rump 1926
Sporulation in nodal tissues 2580 Rump 1926
Completion of life cycle in biomalt agar, but spores do not germinate 2647 Schaffnit 1926
Extraction of fat from within and around spores 2647 Schaffnit 1926
Factors contributing to and repressing production of sporidia 2647 Schaffnit 1926
Per cent infection increased by dehulling seed with sulphuric acid 344 Briggs 1927
Hyphal fusions 633 Dickinson 1927
Incidence in Ireland 2079 Murphy 1927
Segregation of sex and cultural characters is independent 1313 Hüttig 1931
Type of germination regulated by temperature 1313 Hüttig 1931
Effect of depth of seeding on per cent smut 2952 Taylor and Zehner 1931
Chemical composition of the spores 412 Campanile 1932
Beetle feeding on and possibility of biological control 3085 Vanderwalle 1932
Hybrid (natural) with *Ustilago nuda* (?) 3085 Vanderwalle 1932
Trichothecium roseum parasitic on 3085 Vanderwalle 1932
Completion of life history on artificial media 3178 Wang 1932
Development of chlamydospores in culture 3178 Wang 1932
Comparison with field collections of *Ustilago nuda* 2585 Ruttle 1933
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
Highest per cent infection from hand-dehulled seed 4 Aamodt and Johnston 1935
Per cent infection increased by debulling seed with sulphuric acid 4 Aamodt and Johnston 1935
Albino strains 1988 Moore and Allison 1935
Inoculation method 2923 Tapke 1935
Longevity of spores; at least 23 years 779 Fischer 1936
Freshly collected spores germinate less freely 1737 Lobik and Dahlstrem 1936

Case of respiratory allergy 3248 Wittich and Stakman 1937
Serological differentiation in closely related species 172 Beck 1938
Incidence in Cyprus 2092 Nattrass 1938
Growth factors 2690, 2691 Schopfer and Blumer 1938
Artificial infection of *Agropyron caninum, Elymus canadensis, E. glaucus, E. sibericus, Hordeum nodosum,* and *Sitanion jubatum* 781 Fischer 1939
Natural infection of *Agropyron cristatum* and *Elymus glaucus* 781 Fischer 1939
Spores retain viability four years under laboratory conditions 2204 Pal and Mundkur 1939
As cause of hay fever and asthma 3246 Wittich 1939
Increased susceptibility of barley dehulled seed may be due to longer period of emergence 1410 Jones and El Nasr 1940
Lack of uniformity in results of inoculations with same collections and same host testers 2721 Semeniuk 1940
Effect of X-radiation on the germination of spores 2524 Rodenhiser and Maxwell 1941
Rate of mutation not influenced by X-rays 2524 Rodenhiser and Maxwell 1941
Morphologically indistinct from and therefore synonymous with *Ustilago kolleri* (*U. levis*) 788 Fischer 1943
Badly contaminated seed not suited for malting purposes 1897 Mead 1943
Brewing normal flavored beer from smut contaminated barley 3078 Urion and Hanus 1947

PHYSIOLOGIC SPECIALIZATION

730 Faris 1924
2513 Rodenhiser 1928
4 Aamodt and Johnston 1935
24 Allison 1937
2926 Tapke 1937
2721 Semeniuk 1940
3297 Yu and Fang 1945

SPORE GERMINATION AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869
1584 Kühn 1889
1447 Kellerman and Swingle 1890
1932 Miczynski 1893
314 Brefeld 1895
315 Brefeld 1895
1158 Herzberg 1895
62 Appel and Gassner 1907
1751 Lutman 1910
1763 McAlpine 1910
2655 Schellenberg 1911
2231 Paravicini 1917

2163 Novopokrovsky and Skaskin 1925
2580 Rump 1926
2647 Schaffnit 1926
1313 Hütting 1931
1737 Lobik and Dahlstrem 1936 (methods of)
1737 Lobik and Dahlstrem 1936 (temperature range for germination)
1433 Keil 1940
1517 Kolk 1943
215 Bever 1945

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

1103 Heald 1919
730 Faris 1924
513 Conners 1927
2513 Rodenhiser 1928
1053 Hanna and Popp 1931
2087 Nahmacher 1932
1401 Johnston 1934
3295 Yu *et al.* 1934
4 Aamodt and Johnston 1935
24 Allison 1937
3290 Yu 1940
2378 Pugsley and Vines 1946
1256 Holton and Rodenhiser 1948

USTILAGO HYPODYTES (Schlecht.) Fries Syst. Mycol. 3: 518. 1829.

Caeoma hypodytes Schlecht., Fl. Berol. 2: 129. 1824.
Erysibe hypodytes Wallr., Fl. Crypt. Germ. 2: 216. 1833.
Uredo hypodytes Desm., Ann. Sci. Nat. Bot. II. 13: 182. 1840.
Ustilago lygei Rabenh., Unio. Itin. Crypt. 4: 1886.
Ustilago hypodytes var. *lygei* Rabenh., Fung. Europ. No. 1800. 1873.
Ustilago hypodytes forma *tritici repentis* Rabenh., Hedwigia 12: 149. 1873.
Ustilago sporoboli Ell. and Ev., Bull. Torrey Bot. Club 24: 282. 1897.
Ustilago funalis Ell. and Ev., Bull. Torrey Bot. Club 24: 457. 1897.
Ustilago stipicola Speg., Anal. Mus. Nac. Buenos Aires III. 1: 59. 1902.
Ustilago nummularia Speg., An. Mus. Nac. Buenos Aires III. 1: 59. 1902.
Cintractia hypodytes Maire, Bull. Soc. Bot. (France) 53: 197. 1906.
Cintractia distichlydis McAlp., Smuts of Australia 169. 1910.
Ustilago distichlydis Cif., Ann. Mycol. 26: 32. 1928.
Ustilago bromi-erecti Cif., Ann. Mycol. 29: 51. 1931.
Ustilago stipae Cif., Ann. Mycol. 29: 52. 1931.
Ustilago sumnevicziana Lavrov, Trav. Inst. Sci. Biol. Univ. Tomsk 2: 21. 1936. (On *Glyceria distans* Wahl. = *Atropia distans* Rupr., in N. E. Turkistan).
Cintractia hypodytes Maire, Meni. Soc. Sci. Nat. Maroc. 45: 44. 1937.

Note: See also the note under *Ustilago spegazzinii* and *U. spegazzinii* var. *agrestis*. Fischer (790) and Fischer and Hirschhorn (795) considered the binomial *U. hypodytes* as a catch-all *nomen dubium* for several species producing similar symptoms on grasses. This included *U. nummularia* Speg. and since the binomial *U. hypodytes* appeared to be a *nomen dubium* it was pro-

posed to use Spegazzini's binomial for the stem smuts with small, smooth spores, lacking bipolar crests or appendages. Recently, however, Hirschhorn (1213) after critical study of a designated lectotype of *U. hypodytes*, concluded that *U. nummularia* is probably identical and recommends that the latter be considered a synonym or at most a variety of *U. hypodytes*. Hence, I have returned to the binomial *U. hypodytes* and have included *U. nummularia* among the synonyms.

CULTURE ON ARTIFICIAL MEDIA
286 Boss 1927
280 Bornhövd 1936

CYTOLOGY
286 Boss 1927
1459 Kharbush 1927
280 Bornhövd 1936

HETEROTHALLISM AND SEX
159 Bauch 1934 (probably refers to *Ustilago spegazzinii* var. *agrestis*)

HYBRIDIZATION AND GENETICS
159 Bauch 1934 (sporidial fusion with bipolar species—probably refers to *Ustilago spegazzinii* var. *agrestis*)

HOST RANGE
280 Bornhövd 1936

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2667 Schlechtendal 1824
1929 Meyen 1841
202 Berkeley and Broome 1850
614 DeBary 1853
300 Braun 1854
1557 Kühn 1859
803 Fischer v. Waldheim 1869
2329 Plowright 1889
845 Frank 1896
1828 Magnus 1896
647 Dietel 1897
2655 Schellenberg 1911
1690 Lind 1913
2573 Rostrup 1913
2468 Reichert 1921
1720 Liro 1924
774 Fischer and Gäumann 1929
763 Feucht 1930
3331 Zillig 1932
280 Bornhövd 1936

MISCELLANEOUS
First description (as *Caeoma hypodytes*) 2667 Schlechtendal 1824
History, hosts and morphology 1720 Liro 1924
Morphological modifications 763 Feucht 1930

Morphological changes in the host 280 Bornhövd 1936
Comparison with other stem smuts of grasses, *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945
Morphology and symptoms 796 Fischer and Hirschhorn 1945
Position in the *"Ustilago hypodytes"* complex and comparison with other spp. of *Ustilago* causing stem smut 795 Fischer and Hirschhorn 1945
Designation of a lectotype 1213 Hirschhorn 1947
Further clarification of the binomial *"Ustilago hypodytes"* 1213 Hirschhorn 1947

SPORE GERMINATION AND FACTORS AFFECTING
3237 Winter 1876
311 Brefeld 1883
716 Essmon 1893
286 Boss 1927
280 Bornhövd 1936
795 Fischer and Hirschhorn 1945 (as *Ustilago nummularia*)
796 Fischer and Hirschhorn 1945 (as *Ustilago nummularia*)

USTILAGO INTERMEDIA Schröt. Beitr. Biol. Pflanz. (Cohn) 2: 352. 1877. Hedwigia 12: 149. 1873. (Rabenh., Fung. Europ. No. 1696, 1873).

CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2655 Schellenberg 1911

MISCELLANEOUS
Symptoms, morphology and comparison with related species 2655 Schellenberg 1911

SPORE GERMINATION AND FACTORS AFFECTING
2698 Schröter 1877
311 Brefeld 1883

USTILAGO JACKSONII Zundel and Dunlap N. A. Flora 7: (14): 982. 1939.

MISCELLANEOUS
Comparison with other stem smuts on *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945

USTILAGO JACKSONII Zundel and Dunlap var. **VENTANENSIS** Hirschh. Notas Museo de La Plata 8: 171. 1943.

MISCELLANEOUS
Technical description and Latin diagnosis and comparison with other *Ustilago* spp. on Stipa 1209 Hirschhorn 1943

USTILAGO KENJIANA S. Ito Trans. Sapparo Nat. Hist. Soc. 14: 87. 1935.

MISCELLANEOUS
Technical description and Latin diagnosis. In ovaries of sorghum in Manchuria 1328 Ito 1935

USTILAGO KOLLERI Wells Bot. Notiser 1893: 10.

Ustilago avenae var. *levis* Kell. and Sw., Ann. Rept. Kansas Agric. Expt. Sta. 2: 259. 1890.

Ustilago levis Magnus, Ber. Natur-Wiss.-Mediz. Ver. (Innsbruck) 21: 33. 1894.

CONTROL

61 Appel and Gassner 1906
1901 Melchers 1916
847 Fraser and Simmonds 1923
1116 Heald *et al.* 1923
1280 Howitt and Stone 1923
2816 Stakman and Lambert 1923
848 Fraser and Simmonds 1924
639 Dickson 1925
1659 Leukel 1926
270 Bolley and Brentzel 1927
1007 Güssow and Conners 1927
1463 Kiesselbach 1927
2400 Raeder and Hungerford 1927
2638 Sayre and Thomas 1927
868 Fromme 1928
2639, 3640 Sayre and Thomas 1928
516 Conners 1929
2312 Pierstorff and Sayre 1929
2637 Sayre 1929
1429 Karns 1930 (use of iodine dust)
2920 Tapke 1932
3287 Young and McClelland 1933
2063 Mundkur and Khan 1934
136 Barbee 1935
2018 Morwood 1935
983 Greaney and Wallace 1943
2582 Russell 1946 (centrifuge testing of seed to determine if contains enough spores to warrant treating)
2409 Rapin 1947
2756 Simmonds 1948 (use of oil to counteract dust nuisance in fungicides)

CULTURE ON ARTIFICIAL MEDIA

635 Dickinson 1928
2513 Rodenhiser 1928
637 Dickinson 1931
1235 Holton 1931
2340 Popp and Hanna 1935
2444 Reed 1936
2614 Sampson and Western 1938
2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)
3079 Utter 1938

CYTOLOGY
1236 Holton 1932
1244 Holton 1941 (buff smut)

GENETICS
633, 634 Dickinson 1927
635 Dickinson 1928
637 Dickinson 1931

HETEROTHALLISM AND SEX
1050 Hanna and Popp 1930
1054 Hanna and Popp 1931
1235 Holton 1931
1236 Holton 1932
1238 Holton 1933
2340 Popp and Hanna 1935
1241 Holton 1936
1244 Holton 1941

HYBRIDIZATION AND GENETICS
634 Dickinson 1927 (incomplete hybrid with *Ustilago hordei*—infection but not carried to spore formation)
1050 Hanna and Popp 1930
637 Dickinson 1931 (seven pairs of independent characters)
1235 Holton 1931
638 Dickinson 1932
1236 Holton 1932
1238 Holton 1933
2124 Nicolaisen 1934
2340 Popp and Hanna 1935 (with *Ustilago avenae*, and intraspecific)
1240, 1241 Holton 1936 (with buff smut and *Ustilago avenae*)
24 Allison 1937
2614 Sampson and Western 1938
3079 Utter 1938 (with *Ustilago avenae*)
1244 Holton 1941

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3222 Wille 1893
61 Appel and Gassner 1906
2642 Schafer 1923 (effect of dehulling on infection)
546 Coulson and Lods 1925 (heavier percentage of infection results from smaller seed)
3031 Traen 1925 (temperature and humidity requirements for infection)
640 Dickson 1926
1394 Johnston 1927 (soil moisture, temperature and dehulling)
2606 Sampson 1929
2607 Sampson 1933
6 Aamodt and Platt 1936
2444 Reed 1936

2445 Reed 1936 (rate of growth of host has little effect on development of smut)
3207 Western 1936
24 Allison 1937
296 Brandwein 1937
297 Brandwein 1938
2614 Sampson and Western 1938
2447 Reed 1939 (rate of growth of host has little effect on development of smut)
298 Brandwein 1940
2451 Reed 1942
299 Brandwein 1944

MISCELLANEOUS

Covered smut of oats recognized as distinct from loose smut and described as variety *Ustilago avenae* var. *levis* 1447 Kellerman and Swingle 1890
Ustilago avenae var. *levis* raised to specific rank 1822 Magnus 1894
Effect of dehulling oat seed on per cent infection 880 Gaines 1925
Sporulation in leaves 2455 Reed *et al.* 1925
Acontium ustilaginicola n. sp. parasitic on, 640 Dickson 1926
Hyphal fusions 633 Dickinson 1927
Pathological histology. Incomplete hybrids with other species 634 Dickinson 1927
Incidence in Ireland 2079 Murphy 1927
Permanence and segregation of cultural characters 635 Dickinson 1928
Longevity of spores 2605 Sampson 1928
Dehulling increases per cent infection 167 Bayles and Coffman 1929
High mean temperatures at time of seeding favorable to infection 167 Bayles and Coffman 1929
Seedlings from small seed more susceptible than those from large seed 1738 Lods and Coulson 1929
Sporulation in leaves 2606 Sampson 1929
Influence of environment on segregation for sex and cultural characters 636 Dickinson 1930
Incidence on *Avena fatua* in western Canada 2754 Simmonds 1930
On wild oats, *Avena fatua* 2754 Simmonds 1930
Dehulling necessary to satisfactory interpretation of the results of studies of inheritance of smut resistance 2826 Stanton *et al.* 1930
Influence of dehulling on per cent infection 2826 Stanton *et al.* 1930
Increase in per cent infection by dehulling (hulling) seed 2766 Smith and Bressman 1931

Inducing infection on the resistant Markton by cutting back plants 2766 Smith and Bressman 1931
Effect on height and tillering 3196 Welsh 1932
Effect of smut on rust development 3196 Welsh 1932
Morphological responses of plants to infection 3196 Welsh 1932
Smut-infected plants more susceptible to crown rust 3196 Welsh 1932
Buff smut and crosses with *Ustilago avenae* and *U. kolleri* 1238 Holton 1933
Macroscopic distinctions from *Ustilago avenae* 1468 Kingsley 1933
Comparative development of two races on same oat variety 2607 Sampson 1933
Influence of smut infection on plant vigor 1283 Hubbard and Stanton 1934
Most herbarium specimens of oats smuts at Pusa labelled *Ustilago avenae* were *U. kolleri* 2048 Mundkur 1934
Longevity of spores; at least 4 years 779 Fischer 1936
Mutation 1241 Holton 1936
Rate of growth of host does not greatly influence development of smut 2445 Reed 1936
Adverse effects of latent infection 2843 Stevens 1936
Five grades of parasitism in resistant varieties 3207 Western 1936
Variation in extent of infection in different seed lots of same host variety 3207 Western 1936
Cytology of latent infection 296 Brandwein 1937
Latent infection not harmful to host 296 Brandwein 1937
Emergence of seedlings inhibited by smut infection 297 Brandwein 1938
Comparative effectiveness of various inoculation methods 1674 Leukel *et al.* 1938.
Rate of growth of host does not greatly influence development of smut 2446 Reed 1938
Loss of specific pathogenicity through screening effect of hosts 2614 Sampson and Western 1938
Growth factors 2690, 2691 Schopfer and Blumer 1938
Per cent smut decreased by vernalization of the seed 2949 Taylor and Coffman 1938
Host specialized races not distinguishable by cultural characters 3079 Utter 1938
Spores lose viability 4 months under laboratory conditions 2204 Pal and Mundkur 1939
As cause of hay fever and asthma 3246 Wittich 1939
Cause of respiratory allergy 3160 Waldbott and Ascher 1940
Spores quickly lose viability after 4th month 285 Bose and Mundkur 1941

Comparative morphology with *Ustilago hordei*, with which consolidation is recommended 788 Fischer 1943

Variable extent of infection obtained in different seed lots of same variety 2962 Tervet 1944

Twenty-five per cent crop reduction due to, with *Ustilago avenae* 2409 Rapin 1947

PHYSIOLOGIC SPECIALIZATION

2426 Reed 1924
2603 Sampson 1925
2431 Reed 1927
2513 Rodenhiser 1928
2434 Reed 1929
2606 Sampson 1929
2448 Reed 1940
2960, 2961 Tervet 1940
1244 Holton 1941 (seven physiologic races of the buff smut mutant)
2962 Tervet 1944 (need for using same lot of seed over period of years in specialization work)
1256 Holton and Rodenhiser 1948

SPORE GERMINATION AND FACTORS AFFECTING

1447 Kellerman and Swingle 1890
1158 Herzberg 1895
62 Appel and Gassner 1907
2655 Schellenberg 1911
1277 Howe 1926 (effect of pH on)
2605 Sampson 1928

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

2423 Reed 1920
2830 Stanton *et al.* 1924 (immunity of Markton)
879, 880 Gaines 1925
2457 Reed and Stanton 1925
2455 Reed *et al.* 1925
2606 Sampson 1929
504 Coffman *et al.* 1931
2437, 2438 Reed 1931
2766 Smith and Bressman 1931
3195 Welsh 1931
2439 Reed 1932
1389 Johnson 1933
895 Garber and Hoover 1934
2441 Reed 1934
2825 Stanton *et al.* 1934
2828 Stanton *et al.* 1934
2829 Stanton *et al.* 1934
136 Barbee 1935
834 Fomin 1935

2442 Reed 1935
3107 Vears and Macindoe 1935
6 Aamodt and Platt 1936
2444 Reed 1936
2458 Reed and Stanton 1936
229 Blair 1937
1292 Humphrey and Coffman 1937
2459 Reed and Stanton 1937
503 Coffman *et al.* 1938
2460 Reed and Stanton 1938
285 Bose and Mundkur 1941 (in India)
3001 Tingey *et al.* 1941
2451 Reed 1942
2827 Stanton and Murphy 1942

USTILAGO KÜHNEANA Wolff. Bot. Ztg. 1874: 814

CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883

HETEROTHALLISM AND SEX
311 Brefeld 1883

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883
2655 Schellenberg 1911

MISCELLANEOUS
Symptoms and morphology 311 Brefeld 1883
Symptoms and morphology 2655 Schellenberg 1911
History and morphology 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
3252 Wolff 1874
311 Brefeld 1883
2329 Plowright 1889

USTILAGO LAGERHEIMII Bref. Gesammt. Myk. Unters. 12: 136. 1895.

HETEROTHALLISM AND SEX
315 Brefeld 1895 (fusion of sporidia)

MISCELLANEOUS
Morphology and symptoms 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO LONGISSIMA (Schlecht.) Meyen. Pflanz. Path. 124. 1841.

Lycoperdon filiferum Schrank, Hoppe's Bot. Taschenb. 69. 1793.
Uredo longissima Sow., English Fungi. 139. 1799.
Caeoma longissimum Schlecht., Fl. Berol. 2: 129. 1824.
Erysibe longissima Wallr., Fl. Crypt. Germ. 2: 215. 1833.
Ustilago longissima Tul., Ann. Sci. Nat. III. 7: 76. 1847.

Uredo fusco-virens Cesati, Klotzsch-Rabenh. Herb. Viv. Mycol. 1497. 1850.
Ustilago filiformis Rostr., Bot. Foren. Fests. 136. 1890.
Ustilago glyceriae Cif., Ann. Mycol. 29: 31. 1931.

CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883
1501 Kniep 1926
1428 Kammerling 1929
155 Bauch 1931
2690 Schopfer and Blumer 1938

CYTOLOGY
2682 Schmitz 1879
2231 Paravicini 1917
149 Bauch 1923
2732 Seyfort 1927

HETEROTHALLISM AND SEX
159 Bauch 1934
311 Brefeld 1883 (fusions between sporidia)
2231 Paravicini 1917 (fusions between sporidia)
149 Bauch 1923
1501 Kniep 1926
1428 Kammerling 1929
153 Bauch 1930 (multipolar sexuality)
154 Bauch 1930
155 Bauch 1931
158 Bauch 1932

HYBRIDIZATION AND GENETICS
159 Bauch 1934 (sporidial fusions with bipolar species)
1501 Kniep 1926 (sporidial fusions with other species)
1428 Kammerling 1929 (with *Ustilago longissima* var. *macrospora*)
155 Bauch 1931 (intraspecific)
158 Bauch 1932 (genetic bases for hybridization and sterility)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1929 Meyen 1841
614 DeBary 1853
803 Fischer v. Waldheim 1869
311 Brefeld 1883
2554 Rostrup 1885
2329 Plowright 1889
2559 Rostrup 1890
2872 Strohmeyer 1896
1975 Molliard 1898
1148 Hennings 1903
321 Brefeld 1912
149 Bauch 1923
1720 Liro 1924
155 Bauch 1931

MISCELLANEOUS

Morphology and symptoms 311 Brefeld 1883
Toxicity of infected plants 1823 Magnus 1895
Causing modification of bundle structure in *Glyceria aquatica* 1975 Molliard 1898
Toxicity of infected plants 2693 Schoug 1899
Toxicity of infected plants to cattle 705 Eriksson 1900
Toxicity of infected plants to cattle 2550 Rostowzew 1902
Toxicity of infected plants 1129 Hedlund 1908
Toxicity of infected plants 1607 Lagerheim 1909
Toxicity of infected plants 1694 Lindau 1912
Toxcity of infected plants 1690 Lind 1913
Spores not poisonous to animals 162 Baudys 1921
Evidence for and against toxicity of infected plants to cattle 1720 Liro 1924
History, hosts and morphology 1720 Liro 1924
Simultaneous occurrence with var. *macrospora* in same collection and even on same plant 151 Bauch 1926
Clamp connections on the mycelium 2732 Seyfert 1927
Simultaneous occurrence with var. *macrospora* in same collection and even on same plant 1428 Kammerling 1929
Some collections on *Glyceria aquatica* show all three sex groups, some show only two. Only two on *G. plicata* 1428 Kammerling 1929

SPORE GERMINATION AND FACTORS AFFECTING

1225 Hoffmann 1860
616 DeBary 1866
803 Fischer v. Waldheim 1869
311 Brefeld 1883
619 DeBary 1884
2329 Plowright 1889
3335 Zopf 1893
2655 Schellenberg 1911
2231 Paravicini 1917
149 Bauch 1923

USTILAGO LORENTZIANA Thüm. Flora 63: 30. 1880 (see also *Ustilago bullata*)

Ustilago holwayi Dietel, Bot. Gaz. 18: 253. 1893.
Ustilago hordeicola Speg., Anal. Mus. Nac. Buenos Aires III. 12: 1909.

HETEROTHALLISM AND SEX

1048 Hanna and Hurst 1949

MISCELLANEOUS

Common occurrence on *Hordeum jubatum* in Montana (under name of *Ustilago segetum*) 30 Anderson 1889
Inoculations with *Ustilago tritici* and *U. nuda* on *Hordeum jubatum*, wheat and barley; all negative results 851 Freeman and Johnson 1909

Comparative morphology with *Ustilago bromivora* and *U. bullata* with which consolidation is recommended 780 Fischer 1937

USTILAGO MACROSPORA Desm. Pl. Crypt. II. 1727. 1850.

Tilletia serpens Karstens, Fung. Fenn. 599. 1866.
Tilletia aculeata Ule, Abh. Bot. Ver. Prov. Brand. 25: 213. 1884.
Ustilago aculeata Liro, Ann. Acad. Sci. Fenn. A. 17: 66. 1824.

MISCELLANEOUS

The binomial *Ustilago macrospora* is based on a collection of *Urocystis* 1720 Liro 1924

Morphology (as *Ustilago aculeata*) 796 Fischer and Hirschhorn 1945

SPORE GERMINATION AND FACTORS AFFECTING

796 Fischer and Hirschhorn 1945 (as *Ustilago aculeata*)

USTILAGO MAJOR Schröt. Krypt. Fl. Schles. 31: 273. 1889.

HETEROTHALLISM AND SEX

1498 Kniep 1919

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911

MISCELLANEOUS

Morphology 315 Brefeld 1895

Symptoms and morphology 2655 Schellenberg 1911

History and morphology 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING

2329 Plowright 1889

315 Brefeld 1895

USTILAGO MARGINALIS (DC.) Lev. D'Orbigny in Diot. Univ. Hist. Nat. 12: 778. 1848.

Uredo bistortarum f. *marginales* DC., Fl. France 6: 76. 1815.
Uredo pteridiformis Funck, Krypt. Gewächse 27: 4. (No. 564). 1819.
Caeoma marginale Link, in Willd., Sp. Pl. 6: 10. 1825.
Uredo marginalis Rabenh., Krypt, Fl. 1: 7. 1844.
Ustilago bistortarum Rabenh., Krypt. Fl. 1: 95. 1881. p.p.
Ustilago marginalis Schröt., Krypt. Fl. Schles. 3: 272. 1889.

CYTOLOGY

2231 Paravicini 1917

HETEROTHALLISM AND SEX

2231 Paravicini 1917 (fusions between sporidia)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

314 Brefeld 1895

315 Brefeld 1895

2655 Schellenberg 1911

321 Brefeld 1912

1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING

2704 Schröter 1887

315 Brefeld 1895

1841 Maire and Brockman-Jerosch 1907
2655 Schellenberg 1911
2231 Paravicini 1917

USTILAGO MAYDIS (DC.) Corda Icones Fung. 5: 3. 1842.

Lycoperdon zeae Beckm., Hannov. Mag. 6: 1330. 1768. (Pre-Persoonian)
Uredo segetum var. *mays-zeae* DC., Fl. Fr. 2: 506. 1805.
Uredo zeae-mays DC., Syn. Pl. Fl. Gall. 47: 1806.
Uredo segetum f. *zea mays* DC., Encycl. Metho. Bot. 8: 229. 1808.
Uredo maydis DC., Fl. Fr. 6: 77. 1815.
Uredo zeae Schwein., Schr. Nat. Ges. Leipzig 1: 71. 1822.
Caeoma zeae Link, Sp. Pl. 6: 2. 1825.
Uredo zeae Chevallier, Fl. Paris 1: 403. 1826.
Erysibe maydis Wallr., Fl. Crypt. Germ. 2: 215. 1833.
Ustilago zeae Unger., Einf. Bodens 211. 1836.
Ustilago carbo-maydis Phillipar, Traite Caris. Charbon 68. 1837.
Ustilago maydis Lev., Ann. Sci. Nat. II. 11: 13. 1839.
Ustilago maydis Corda, Icon. Fung. 5: 3. 1842.
Ustilago schweinitzii Tul., Ann. Sci. Bot. III. 7: 86. 1847.
Ustilago reiliana f. *zeae* Pass., Bull. Com. Agric. Parmense, 1–3 (extra). 1876.
Ustilago zeae mays Wint., Rabenh. Krypt. Fl. 1: 97. 1881.
Ustilago euchlaenae Pass., Erb., Critt. Ital. 2: Fasc. 23–24, No. 1125. 1882.
Ustilago maydis f. *foliicola* D. Sacc., Mycol. Ital. 1269. 1886.
Ustilago maydis f. *androphila* D. Sacc., Mycol. Ital. 1270. 1886.
Ustilago zeae-maydis (DC.) Tul., in Roumeguere, Fungi. Europ. Gall. 4318. 1888. (Rev. Mycol. 10: 8. 1888).
Ustilago mays-zeae Magnus, in Verh. Bot. Ver. Prov. Brandenb. 37: 72. 1895.

CONTROL

205 Bessey 1889
2993 Von Thuemen 1889
1936 Kellerman 1891 (fungicidal sprays)
2223 Pammel and Stewart 1893
103 Arthur and Stuart 1896
2874 Stuart 1896 (fungicidal sprays)
104 Arthur and Stuart 1900
1140 Henning 1901
3193 Weiss 1902
1901 Melchers 1916
2307 Pichler and Wober 922 (use of ultra-violet and X-rays and radium)
2355 Potter and Melchers 1925 (including fungicidal sprays)
1007 Güssow and Conners 1927
819 Fleischmann 1937
1519 Kornfeld 1937
2707 Schultz 1937
2257 Perlet 1938
2255 Pepper and Haenseler 1944

CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883
314 Brefeld 1895

1838 Maire 1898
1003 Grüss 1902
2310 Piemeisel 1917
2621 Sartoris 1924
2355 Potter and Melchers 1925
455 Christensen and Stakman 1926
3011 Tisdale and Johnston 1926
692, 693 Eddins 1929
1037, 1040 Hanna 1929
2812 Stakman *et al.* 1929
2811 Stakman *et al.* 1929
2403 Ranker 1930 (comparative growth in expressed juice from resistant and susceptible corn lines)
2404 Ranker 1930
452 Christensen 1931
1313 Hüttig 1931
156 Bauch 1932
2763 Sleumer 1932
2822 Stakman *et al.* 1933
1214 Hirschhorn and Hirschhorn 1935 (including spore formation)
441 Chilton 1938
1329 Itzerott 1938 (influence of extract of coleoptiles on rate of growth)
1452 Kernkamp 1938
1712 Link *et al.* 1938
2690, 2691 Schopfer and Blumer 1938 (growth factors)
1215 Hirschhorn and Hirschhorn 1939 (effect of pH of medium and mutation on cultural characters)
1216 Hirschhorn and Hirschhorn 1939
1453 Kernkamp 1939
2022 Moulton and Link 1940 (auxin production)
2681 Schmitt 1940
1454 Kernkamp 1942
927 Gattani 1946 (physiologic differences between diploid lines)
2821 Stakman *et al.* 1946 (tolerance to arsenites)

CYTOLOGY

1838 Maire 1898
2414 Rawitscher 1912
2732 Seyfert 1927
1460 Kharbush 1928
1039, 1040 Hanna 1929
452 Christensen 1931
2763 Sleumer 1932
3171 Walter 1934
291 Bowman 1940

442 Chilton 1940
292 Bowman 1946

HETEROTHALLISM AND SEX

2732 Seyfert 1927
2809 Stakman and Christensen 1927
1039,,1040 Hanna 1929
2811 Stakman *et al.* 1929 (sex governed by multiple factors)
2812 Stakman *et al.* 1929
452 Christensen 1931
1313 Hüttig 1931
156 Bauch 1932
2763 Sleumer 1932 (6 sex groups)
159 Bauch 1934
2823 Stakman *et al.* 1935
1453 Kernkamp 1939
291 Bowman 1940
442 Chilton 1940
2681 Schmitt 1940
292 Bowman 1946 (sporidial fusions)

HYBRIDIZATION AND GENETICS

2811 Stakman *et al.* 1929 (intra-specific)
2812 Stakman *et al.* 1929
452 Christensen 1931
1980 Moore 1932
159 Bauch 1934 (sporidial fusions with bipolar species)
2805 Stakman 1936
441 Chilton 1938
1452 Kernkamp 1938
1453 Kernkamp 1939 (intra-specific)
442 Chilton 1940 (delayed reduction of diploid nucleus)
2681 Schmitt 1940 (intra-specific hybridization for color, growth type and sex segregation)
443 Chilton 1943 (inheritance of lysis character)
2814 Stakman *et al.* 1943
2815 Stakman *et al.* 1943 (inheritance of white mutant character)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1317 Imhoff 1784
2476 Reissek 1847
1556 Kühn 1858
1558 Kühn 1866
1562 Kühn 1874
311 Brefeld 1883
173 Beck 1885
547 Craig 1886
313 Brefeld 1888
1506 Knowles 1889
2223 Pammel and Stewart 1893

3272 Yasuda 1894
314 Brefeld 1895
1218 Hitchcock and Norton 1896
2720 Selby and Hickman 1897
104 Arthur and Stuart 1900
479 Clinton 1900
600 Davis 1900
1217 Hitchcock 1900
1856 Marchis 1900
1140 Henning 1901
1003 Grüss 1902
2418 Ray 1903
322 Brefeld and Falk 1905
439 Chifflot 1907
440 Chifflot 1909
1316 Iltis 1910
3202 Werth 1913
2309 Piemeisel 1914
2310 Piemeisel 1917
2353 Potter and Melchers 1917
1790 MacMillan 1918
260 Bois 1921
230 Blaringhem 1923
2621 Sartoris 1924
2163 Novopokrovsky and Skaskin 1925
2355 Potter and Melchers 1925
505 Coffman *et al.* 1926
1655 Leszczenko 1926
3011 Tisdale and Johnston 1926
189 Benigni 1927
1007 Güssow and Conners 1927
2648 Schaffnit and Volk 1927
2732 Seyfert 1927
998 Griffiths 1928
1322 Immer and Christensen 1928
692, 693 Eddins 1929
1039, 1040 Hanna 1929
1602 Kyle 1929
2321 Platz 1929
1603 Kyle 1930
2402 Ranker 1930
1916 Melhus and Davis 1931
592 Davis 1932
1893, 1894, 1895 Maze and Maze 1932
2113 Nemec 1932 (pathological histology and development of the galls)
2763 Sleumer 1932

2299 Piacco 1933
2833 Starr 1933
3171 Walter 1934
282 Borzini 1935
281 Borzini 1935
593 Davis 1935
1214 Hirschhorn and Hirschhorn 1935
3172 Walter 1935
594 Davis 1936
594 Smith 1936
819 Fleischmann 1937
2707 Schultz 1937
1519 Kornfeld 1937
1312 Hutchins and Lutman 1938
1330 Itzerott 1938
1329 Itzerott 1938
3141 Vohl 1938
1611 Landen 1939
2022 Moulton and Link 1940
2681 Schmitt 1940
1455 Kernkamp and Martin 1941 (paired haploid lines vs. composite of mixed haploids in pathogenicity)
2116 Nemlienko 1941
2255 Pepper and Haenseler 1944
3221 Wilkinson and Kent 1945
1922 Menzies and Stanberry 1947
753, 754 Feldman 1948
2077 Munnecke 1948

MISCELLANEOUS

Host abnormalities induced 2476 Reissek 1847
Lethal effect on young corn seedlings 1562 Kühn 1874
Medicinal properties 964 Goss 1881
Medicinal properties 1018 Hahn 1881
Evidence against toxicity to cattle 1151 Henry 1881
Medicinal properties 1387 Johnson 1882
Chemical analysis 2237 Parsons 1882
Inoculation methods and experiments 311 Brefeld 1883
Medicinal properties 934 George 1884
Medicinal properties 1388 Johnson 1884
Spores still viable after passing through digestive tract of cows 2002 Morini 1884
Connection with pellagra 2232 Pari 1884
Physiological effects upon nervous system 1960 Mitchel 1886
"Ustilagini,"-active medicinal principle 2396 Rademaker and Fischer 1887
Inoculation experiments 313 Brefeld 1888

Evidence for and against toxicity of corn smut to cattle 205 Bessey 1889
Pathological histology 1506 Knowles 1889
Lethal effect on young corn seedlings 314 Brefeld 1895
Early appearance in Germany 1824 Magnus 1895
Corn smut not toxic to cattle 1998 Moore and Schweinitz 1896
Corn smut not toxic to cattle 2764 Smith 1896
Effect on uterine contractions 305 Braunstein 1897
Comparative dimensions of sporidia from different culture media 1838 Maire 1898
Lethal effect on young corn seedlings 104 Arthur and Stuart 1900
Spores not viable after passing through digestive tract of cow 104 Arthur and Stuart 1900
Effect on yield 479 Clinton 1900
Analysis of toxic constituents of corn smut 2876 Stuart 1901
Production of chlamydospores in culture 1003 Grüss 1902
Source of an alkaloid 1857 Marchis 1904
Chemistry of 3320 Zellner 1910
Proliferation caused by 1316 Iltis 1910
Corn smut poisonous to cattle 2219 Pammel 1911
Medicinal properties 727 Faminzin 1912
Toxicity of spores to animals 1726 Liskun and Krastavitsky 1914
Lethal effect on young corn seedlings 2310 Piemeisel 1917
No loss of virulence by prolonged culturing on synthetic media 2310 Piemeisel 1917
Spores lost viability after few weeks in silo 2310 Piemeisel 1917
Epidemic following hail storm 1790 MacMillan 1918
Effect of ultra-violet and X-rays and radium on germinability 2307 Pichler and Wober 1922
Corn smut spores in the air at high altitudes 2813 Stakman *et al.* 1923
Discovery in the gold coast of Africa 575 Dade 1924
Effect on yield 1092 Hayes *et al.* 1924
Production of chlamydospores in culture 2621 Sartoris 1924
Oospora verticillioides parasitic on in Russia 622 Deckenbach 1925
Use of hypodermic needle to inoculate 455 Christensen and Stakman 1926
Influence of weather conditions on incidence of infection 505 Coffman *et al.* 1926
Effect of smut on sap concentration 1305 Hurd-Karrer 1926
Carrot decoction cultures better inoculum than spores or agar cultures 3011 Tisdale and Johnston 1926
Greenhouse testing of varietal reaction 3011 Tisdale and Johnston 1926
Use of hypodermic needle to inoculate 3011 Tisdale and Johnston 1926

Cardinal temperatures for spore germination 189 Benigni 1927
Longevity of the spores 189 Benigni 1927
Effect of smut infection on sugar content of corn stalks 1306 Hurd-Karrer and Hasselbring 1927
Differences between highly susceptible and resistant varieties re number and size of galls 1319 Immer 1927
Use of hypodermic needle to inoculate 1319 Immer 1927
Formation of clamp connections in mycelium 2732 Seyfert 1927
Influence of corn smut on yield 894 Garber and Hoover 1928
Smut susceptibility of naturally resistant corn when artificially inoculated 998 Griffiths 1928
Determination of losses due to smut infection 1321 Immer and Christensen 1928
Pathogenicity of monosporidial vs. multisporidial cultures 693 Eddins 1929
Solopathogenic lines 693 Eddins 1929
Use of hypodermic needle to inoculate 693 Eddins 1929
Effect of digestive processes on spore viability 766 Ficke and Melchers 1929
Spores non-toxic to horses 766 Ficke and Melchers 1929
Use of hypodermic needle to inoculate 998 Griffiths 1929
Production of sporidia on infected corn leaves floated on distilled water 1040 Hanna 1929
Effect of smut on yield 1415 Jorgensen 1929
Ears with short husks more liable to smut 1602 Kyle 1929
Sectoring and mutation 2811, 2812, Stakman *et al.* 1929
Solopathogenic lines 2811 Stakman *et al.* 1929
Inoculation by hypodermic injection 3318 Zehner and Humphrey 1929
Bacterial antibiosis 131 Bamberg 1930
Susceptibility directly related to vigor of host plant 1603 Kyle 1930
Nature of resistance 2403 Ranker 1930
Physiological and morphological resistance in the host 2403 Ranker 1930
Synthetic nutrient media for cultures 2404 Ranker 1930
Bacterial antibiosis 132 Bamberg 1931
Genetic studies 452 Christensen 1931
Solopathogenic lines 452 Christensen 1931
Factors for sex segregated independently of those for cultural characters 1313 Hüttig 1931
Type of germination markedly influenced by temperature 1313 Hüttig 1931
Effect on yield 1323 Immer and Christensen 1931
Reaction of the host plant 1323 Immer and Christensen 1931
Nodal infection 1916 Melhus and Davis 1931

Relation of surface tension of sporidial suspensions to per cent smutted plants 1916 Melhus and Davis 1931
Incidence in Cyprus 2089 Nattrass 1931
Prevalent and severe in Soviet Russia 277 Borghardt 1932
Chemical composition of the spores 412 Campanile 1932
Relation of axillary bud development to nodal smut infection 592 Davis 1932
Nature of resistance 1894 Maze and Maze 1932
Genetic studies 1980 Moore 1932
Development of smut galls 2113 Nemec 1932
Pathological histology of galls 2113 Nemec 1932
Tetraploidy and polyploidy in affected host cells 2113 Nemec 1932
Solopathogenic lines 2763 Sleumer 1932
Spores contain a substance acting similarly to ergotamine on adrenalin hyperglycaemia 137 Bajaktarovic and Bogdanovic 1933
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
Stimulatory effects of ether 704 Enomoto 1934
Medicinal properties 1675 Levy and Bogdanovic 1934
Causes estimated annual loss in U.S. of about 55,000,000 bushels 3171 Walter 1934
Size of smut galls not sole measure of resistance or susceptibility 453 Christensen and Johnson 1935
Oospora verticilioides, parasitic on corn smut 622 Deckenbach 1935
Aqueous extract of spore material more toxic than ergot extract to mice 679 Dragisic and Varicak 1935
Influence of corn smut on yield 896 Garber and Hoover 1935
Determination of reduction in yield 1386 Johnson and Christensen 1935
Direct correlation of high osmotic pressure of seed with smut susceptibility 2405 Ranninger and Lerner 1935
Review of various inoculation methods and results obtained 3172 Walter 1935
Poor stands associated with heavy smut infections 396 Burk *et al.* 1936
Longevity of spores; at least 2 years 779 Fischer 1936
Incidence in south Germany 1527 Kotte 1936
Number of barren stalks of corn directly proportional to percentage of infection in field 2768 Smith 1936
Susceptibility of teosinte 819 Fleischmann 1937
Hail storms increase incidence 1519 Kornfeld 1937
Longevity of spores under variable conditions 1519 Kornfeld 1937
Case of dermatomycosis caused by 2362 Preininger 1937

Review of 64 papers on corn smut 2702 Schultz 1937
Composed of indefinite number lines especially adapted to genetic and mutation studies 2806 Stakman 1937
Causing respiratory allergy 3248 Wittich and Stakman 1937
Seriological differentiation in closely related species 172 Beck 1938
Lysis in promycelia of hybrid chlamydospores 441 Chilton 1938
Solopathogenic lines 441 Chilton 1938
Toxic effect of extracts of corn smut on various animals 1302 Hunt and Thompson 1938
Abortion in animals and other injurious effects 1302 Hunt and Thompson 1938
Review of pharmacological investigations on *Ustilago maydis* 1302 Hunt and Thompson 1938
Spine development on spores 1312 Hutchins and Lutman 1938
Influence of extract of coleoptiles and auxins and vitamins on growth in culture 1329 Itzerott 1938
Influence of pH on spore germination and formation of sporidia 1330 Itzerott 1938
Production of auxones in culture 1712 Link *et al.* 1938
Fifteen cases of smut poisoning of children in Jugoslavia 1891 Mayerhofer and Dragisic 1938
Smutty corn not safe to use for fodder to feed livestock 2257 Perlet 1938
Growth factors 2690, 2691 Schopfer and Blumer 1938
Linkage relations between smut resistance and semi-sterility in corn 398 Burnham and Cartledge 1939
Sensitivity to ultra-violet light 1611 Landen 1939
Spores not toxic to guinea pigs 1331 Itzerott 1939
As cause of hay fever and asthma 3246 Wittich 1939
Incidence in Italian E. Africa 425 Castellani 1940
Delayed reduction of the diploid nucleus 442 Chilton 1940
Inoculation method 643 Dickson and Bowman 1940
Production of auxins in culture 2022 Moulton and Link 1940
Attempts to produce chlamydospores on agar uniformly unsuccessful 2681 Schmitt 1940
Comparative rate of mutation between sporidial and mycelial lines 2681 Schmitt 1940
Rate of mutation not affected by X-ray, ultra-violet or high temperature near thermal death point 2681 Schmitt 1940
3/4000 monosporidial lines solopathogenic 2681 Schmitt 1940
Artificial culture for medicinal use 2711 Scossiroli 1940
Cause of respiratory allergy 3160 Waldbott and Ascher 1940
Various types of germination and promycelia produced rather than supposedly normal four-celled promycelium 1456 Kernkamp and Petty 1941
Physical and chemical adaptation in cultures 2293 Petty 1942

A source of mitogenetic radiation 428 Cercos and Favret 1946
Physiologic (cultural) differences between diploid lines 927 Gattani 1946
Host range 1917 Melhus and Kent 1946
Build-up of tolerance to arsenites through continuous exposure 2821 Stakman *et al.* 1946
Inoculation method 2844 Stevens *et al.* 1946
Ustilago euchlaenae Passerini is synonym 1213 Hirschhorn 1947
Physiological studies of hybrid lines 753, 754 Feldman 1948

PHYSIOLOGIC SPECIALIZATION
1902 Melchers 1921
455 Christensen and Stakman 1926 (on cultural basis plus pathogenicity)
2808 Stakman and Christensen 1926
2809 Stakman and Christensen 1927 (on cultural basis)
3115 Verplancke 1930 (biometric study)
2823 Stakman *et al.* 1935 (on cultural basis)
1216 Hirschhorn and Hirschhorn 1939 (510 races on basis of cultural characters)

SPORE GERMINATION AND FACTORS AFFECTING
3251 Wolff 1873
1573 Kühn 1876
311 Brefeld 1883
313 Brefeld 1888
314 Brefeld 1895
2851 Stewart 1895
2159 Norton 1896
1838 Maire 1898
2655 Schellenberg 1911
2803 Stakman 1913
2309 Piemeisel 1914
2310 Piemeisel 1917
1406 Jones 1923
2163 Novopokrovsky and Skaskin 1925
1654 Leszczenko 1926
2322 Platz *et al.* 1927 (stimulating effect of carbonic acid)
2320 Platz 1928 (importance of oxygen)
452 Christensen 1931
1313 Hüttig 931 (marked influence of temperature on)
2763 Sleumer 1932
281, 282 Borzini 1935
1330 Itzerott 1938 (effect of acidity on spore germination)
2681 Schmitt 1940

VARIETAL RESISTANCE, SUSCEPTIBILITY AND INHERITANCE OF
1402 Jones 1918
1403 Jones 1920
1092 Hayes *et al.* 1924

897 Garber and Quisenberry 1925
1320 Immer and Christensen 1925
505 Coffman *et al.* 1926
997 Griffiths 1927
1319 Immer 1927
998 Griffiths 1928
2321 Platz 1929
1603 Kyle 1930
2403 Ranker 1930 (morphological versus physiological resistance)
1263 Hoover 1932
2405 Ranninger and Lerner 1935 (correlation of susceptibility with high osmotic pressure of seed)
396 Burk *et al.* 1936
2591 Saboe and Hayes 1941
1917 Melhus and Kent 1946
1091 Hayes, Rinke and Tsiang 1946
1919 Melhus and Semeniuk 1946

USTILAGO MEDIANS Biedenkopf Zeitschr. f. Pflanzenkr. 4: 321. 1894.

CULTURE ON ARTIFICIAL MEDIA
24 Allison 1937

HETEROTHALLISM AND SEX
24 Allison 1937

HYBRIDIZATION AND GENETICS
23 Allison 1935
24 Allison 1937 (with *Ustilago hordei*)
24 Allison 1937 (incomplete hybridization with *Ustilago avenae, U. kolleri, U. nuda, U. tritici,* i.e., sporidial fusions but little or no infection)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
24 Allison 1937

MISCELLANEOUS
Description and account of symptoms 219 Biedenkopf 1894
Distribution in the United States 1987 Moore and Allison 1935
Based on a mixed collection of *Ustilago nuda* and *U. nigra* and therefore invalid binomial 2935 Tapke 1943

USTILAGO MICROTHELIS H. and P. Sydow Ann. Mycol. 22: 280. 1924

MISCELLANEOUS
Comparison with other smuts on *Saccharum* and *Erianthus* 2897 Sydow 1924
Comparison with other sugar cane smuts and first report from Argentina 1201 Hirschhorn 1942

USTILAGO MINIMA Arthur Bull. Iowa Agric. Coll. Dep. Bot. Bull. 1884: 172.

Ustilago stipae Cif., Ann. Mycol. 29: 52. 1931.

MISCELLANEOUS

Pathological histology; geographic distribution; comparison with other stem smuts on *Stipa* and *Oryzopsis* 790 Fischer 1945

Reasons for considering *Ustilago stipae* Cif. as synonym 1213 Hirschhorn 1947

USTILAGO MINOR Norton Trans. Acad. Sci. St. Louis 7: 238. 1896.

Ustilago hieronymi var. *minor* Cif., Trans. Brit. Mycol. Soc. 18: 262. 1934.

MISCELLANEOUS

Comparison with other smuts on Bouteloua 472 Ciferri 1934

SPORE GERMINATION AND FACTORS AFFECTING

2159 Norton 1896

USTILAGO MORINAE Padwick and Azmatullah Khan Imp. Mycol. Inst. (New Delhi) Mycol. Papers No. 10: 1. 1944.

MISCELLANEOUS

Technical description 2203 Padwick and Khan 1944

USTILAGO NEGLECTA Niessl Rabenh. Fungi Europ. 1200. 1868.

Uredo decipiens f. *graminum* Strauss, Ann. Wetterausch. Gesell. Naturk. 2: 111. 1811. p.p.

Erysibe panicorum f. *panici glauci* Wallr., Fl. Krypt. Germ. 2: 216. 1833.

Ustilago panici glauci Wint., in Rabenh. Krypt. Fl. 1: 97. 1881.

CULTURE ON ARTIFICIAL MEDIA

1871 Martin and Kernkamp 1941

CONTROL

277 Borghardt 1932

MISCELLANEOUS

Symptoms and morphology 2655 Schellenberg 1911

Longevity of spores; at least 7 years 779 Fischer 1936

SPORE GERMINATION AND FACTORS AFFECTING

311 Brefeld 1883

2159 Norton 1896

1517 Kolk 1943

USTILAGO NIGRA Tapke Phytopath. 22: 869. 1932 and 33: 208. 1933. Also Jour. Agric. Res. 51: 491-508. 1935.

Ustilago medians Biedenkopf, p.p., Zeitschr. f. Pflanzenkr. 4: 321–322. 1894.

CONTROL

2920 Tapke 1932

2922 Tapke 1935

1664 Leukel 1936

3288 Young and McClelland 1940

CULTURE ON ARTIFICIAL MEDIA

2587 Ruttle 1934

CYTOLOGY
2587 Ruttle 1934
HETEROTHALLISM AND SEX
2587 Ruttle 1934
HYBRIDIZATION AND GENETICS
23 Allison 1935
24 Allison 1937
1300 Hungerford 1938 (with *Ustilago hordei*)
213 Bever 1942 (buff-colored nonpathogenic segregate from cross with *Ustilago hordei*)
2937 Tapke 1944
215 Bever 1945 (with *Ustilago hordei*)
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3017 Tisdale and Tapke 1924 (under the name of *Ustilago nuda*)
3018 Tisdale and Tapke 1925 (mistaken for *Ustilago nuda*)
1663 Leukel 1932
2587 Ruttle 1934
2922 Tapke 1935
1664 Leukel 1936
1420 Josephson 1942 (influence of temperature and moisture)
MISCELLANEOUS
Comparison with *Ustilago nuda* 2921 Tapke 1932
Technical description 2921 Tapke 1932
Ustilago medians Biedenkopf probably should have priority 2587 Ruttle 1934
Inoculation method 2927 Tapke 1937
Artificial infection of *Elymus canadensis, Hordeum nodosum, Sitanion jubatum* 781 Fischer 1939
Earlier confusion with *Ustilago nuda* and the supposition that *U. nuda* was responding to chemical seed treatment 2933 Tapke 1941
Technique for rapid differentiation from *Ustilago nuda* 2934 Tapke 1941
Comparative morphology with *Ustilago avenae* and *U. perennans* with which consolidation is recommended 788 Fischer 1943
Badly contaminated seed unsuited for malting purposes 1897 Mead 1943
Ustilago medians although an earlier name is invalid because based on mixture 2935 Tapke 1943
Incidence in Quebec and Manitoba 517 Conners and Saville 1944
Incidence in Palestine 1959 Minz 1944
Spore load as indication of need of seed treatment 433 Cherewick 1948
PHYSIOLOGIC SPECIALIZATION
2924 Tapke 1936
1420 Josephson 1942
2936 Tapke 1943

SPORE GERMINATION AND FACTORS AFFECTING

219 Biedenkopf 1894 (under name of *Ustilago medians* n. sp.)
2587 Ruttle 1934
2922 Tapke 1935
2934 Tapke 1941
2935 Tapke 1943
215 Bever 1945

USTILAGO NUDA (Jens.) Rostr. Tidsskr. f. Landøkon. 8: 745. 1889.

Uredo carbo DC., Fl. France 6: 76. 1815. p.p.
Ustilago segetum Link, Ditmar in Sturm's Deutschland Fl. III, 1: 67. 1817. p.p.
Caeoma segetum Link, in Willd., Sp. Pl. 6: 1. 1825. p.p.
Erysibe vera f. *hordei* Wallr., Fl. Krypt. Germ. 2: 217. 1833. p.p.
Uredo carbo-hordei Phillipar, Mem. Soc. Roy. Agric. Arts Seine-et-Oise 37: 195. 1837. p.p.
Ustilago hordei Bref., Nachr. Klub. Landw. (Berlin) 1593: 1888. p.p.
Ustilago segetum var. *hordei* f. *nuda* Jensen, Om Korns. Brand. 61. 1888.
Ustilago segetum var. *nuda* Jensen, Jour. Roy. Agric. Soc. England 24: 406. 1888.
Ustilago hordei var. *nuda* Jensen, Charb. Cereales 4: 1889.
Ustilago nuda Kell. and Sw., Ann. Rept. Kans. Agric. Expt. Sta. 2: 277. 1890.
Ustilagidium hordei Zopf, in Herzberg, Beitr. Phys. Morph. Neiderer Org. 5: 7. 1895.
Ustilago nuda var. *foliicola* Trotter, Ann. Mycol. 11: 415. 1913.

CONTROL

1858, 1859 Märcker 1887
1447 Kellerman and Swingle 1890
3025 Toporkow 1903
851 Freeman and Johnson 1909
2792 Sperling 1910
68, 69 Appel and Riehm 1911
2862 Störmer 1911
71 Appel and Riehm 1912
2864 Störmer 1912
72 Appel and Riehm 1914
1693 Lind 1915
2386 Quanjer and Batjes 1915
1901 Melchers 1916
2307 Pichler and Wober 1922 (use of ultra-violet, X-rays and radium)
115 Ausborn 1923
2040 Müller *et al.* 1923
3021 Tisdale, Taylor and Griffiths 1923
2526 Rodenhiser and Stakman 1925
512 Conners 1926
1007 Güssow and Conners 1927
1648 Leidner 1927
2619 Sappok 1928

972 Gram 1929
2951 Taylor and Zehner 1930
2919 Tapke 1931 (through production of seed wheat in low-humidity smut-free areas)
1663 Leukel 1932
2103 Neill 1932
3085 Vanderwalle 1932
922 Gassner and Kirchhoff 1934
1164 Hewlett and Hewlett 1934
651 Dieudonne and Vanderwalle 1935
3086, 3087, 3088 Vanderwalle 1935
2179 Oort 1936
2715 Selaries 1937
2129 Niemeyer 1938
3024 Toomre 1938
3186, 3187 Weck 1938
434 Chester 1940 (portable hot water seed treater)
3288 Young and McClelland 1940
1262 Honecker 1943
195 Bergal 1944
1627 Larose *et al.* 1946
2583 Russell 1947
2705 Schuk 1947

CULTURE ON ARTIFICIAL MEDIA

1158 Herzberg 1895
68 Appel and Riehm 1911
2489 Riehm 1914
1501 Kniep 1926
2512 Rodenhiser 1926 (chlamydospores produced)
2513 Rodenhiser 1928
2587 Ruttle 1934
2986 Thren 1937
2690, 2691 Schopfer and Blumer 1938 (auxo-autotrophic)

CYTOLOGY

2414 Rawitscher 1912
367 Broili and Schikorra 1913
2231 Paravicini 1917
2416 Rawitscher 1922
2586 Ruttle 1934
2989 Thren 1941 (cytology of the dicaryophase)

HETEROTHALLISM AND SEX

2231 Paravicini 1917 (copulation between promycelial cells)
1501 Kniep 1926
2986 Thren 1937

HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (incomplete hybridization with *Ustilago hordei* and *U. bullata*)

2586 Ruttle 1934 (with smut intermediate between *Ustilago nigra* and *U. nuda*)
24 Allison 1937 (with *Ustilago hordei*—unsuccessful)
2989 Thren 1941 (copulation with *Ustilago tritici, U. hordei, U. medians*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

1361 Jensen 1887
1363 Jensen 1888
1447 Kellerman and Swingle 1890
2560 Rostrup 1890
2330 Plowright 1892
1792 Maddox 1895
1795 Maddox 1897
2571 Rostrup 1902
318 Brefeld 1903 (early demonstration of intraseminal infection)
1120 Hecke 1904 (early demonstration of intraseminal infection)
322 Brefeld and Falk 1905
1121 Hecke 1905
1271 Hori 1907 (early demonstration of intraseminal infection)
851 Freeman and Johnson 1909
2968 Theomin 1909
364 Broili 1910
1763 McAlpine 1910
68 Appel and Riehm 1911
365 Broili 1911
71 Appel and Riehm 1912
321 Brefeld 1912
367 Broili and Schikorra 1913
72 Appel and Riehm 1914
1691 Lind 1915 (influence of chemical fertilizers)
1616 Lang 1917
1886 Hiltner and Land 1922 (effect of ammonium sulfate on)
1488 Kitunen 1922
1618 Lang 1923
2163 Novopokrovsky and Skaskin 1925 (effect of temperature on germination of spores)
3017, 3018 Tisdale and Tapke 1925 (infection of barley through seed inoculation—later shown to be *Ustilago nigra*)
2714 Seiffert 1927
1469 Kirby 1927 (soil temperatures)
3009, 3010 Tisdale and Griffiths 1927 (variations in life history; later shown to be due to mixtures with *Ustilago nigra*)
1791 Macrae 1930
2919 Tapke 1931
1663 Leukel 1932
3085 Vanderwalle 1932

922 Gassner and Kirchhoff 1934
2586, 2587 Ruttle 1934
3087 Vanderwalle 1935
1632 Lasser 1938
3024 Toomre 1938
2180 Oort 1939
2181 Oort 1940
3089 Vanderwalle 1940
2988, 2989 Thren 1941
2738 Shands and Schaller 1946 (inoculation with dry spores in hypodermic needle)
2940 Tapke 1948

MISCELLANEOUS

Differentiation from *Ustilago hordei* and early data 1363 Jensen 1888
Early history 1447 Kellerman and Swingle 1890
Histological detection of mycelium in barley embryos 366 Broili 1918
Effects of ultra-violet and X-rays and radium on spore germination 2307 Pichler and Wober 1922
Expressing symptoms of *Ustilago hordei* 1618 Lang 1923
Hosts and morphology and comparison with *Ustilago tritici* 1720 Liro 1924
Chlamydospores produced in culture 2512 Rodenhiser 1926
Morphologically indistinct from *Ustilago tritici* 2512 Rodenhiser 1926
Rare in Ireland 2079 Murphy 1927
Morphologically indistinct from *Ustilago tritici* and considered synonym 2513 Rodenhiser 1928
Production of chlamydospores in culture 2513 Rodenhiser 1928
Inoculation by hypodermic injection 3318 Zehner and Humphrey 1929
Early maturing spores less viable than later 1791 Macrae 1930
Germination more profuse when spores are agglutinated than when isolated or scattered 1791 Macrae 1930
Recognition of diseased plants before emergence of spikes 752 Feistritzer 1931
Influence of humidity on floral infections 2919 Tapke 1931
Effect of depth of seedling on per cent smut 2952 Taylor and Zehner 1931
High percentage of infection from seed several years old, but not in original and first year seed 1494 Kling 1932
Seed infection 1663 Leukel 1932
Comparison with *Ustilago nigra* n. sp. 2921 Tapke 1932
Beetle extensively feeding on and possibility of biological control 3085 Vanderwalle 1932

Trichothecium roseum parasitic 3085 Vanderwalle 1932
A late form intermediate in morphology between *Ustilago nuda* and *U. hordei* 3085 Vanderwalle 1932
Fungus and insect enemies 3085 Vanderwalle 1932
Late form considered natural hybrid with *Ustilago hordei* 3085 Vanderwalle 1932
Late type attacking only lower part of head (possible hybrid between *Ustilago nuda* and *U. hordei*) 3085 Vanderwalle 1932
Leaves infected in greenhouse 3085 Vanderwalle 1932
Inoculation methods 3319 Zeiner 1932
Longevity of spores 3319 Zeiner 1932
Recognition of diseased plants before emergence of spikes 3319 Zeiner 1932
Comparative morphology with field collections of *Ustilago hordei* 2585 Ruttle 1933
Flotation method of separating out infected grains 3312 Zalewsky and Wasjuta 1933
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
Stimulatory effects of ether 704 Enomoto 1934
Heads infected fall into at least two color groups 1987 Moore and Allison 1935
Differentiation from *Ustilago nigra* 2922 Tapke 1935
Inoculation method 2923 Tapke 1935
Direct inoculation of embryo 3088 Vanderwalle 1935
Portable evacuation apparatus for field inoculations 1981, 1992 Moore 1936
A physiologic form in Holland germinating like *Ustilago hordei* (probably *U. nigra* but not so stated) 2179 Oort 1936
Method of separating the four promycelial cells 2986 Thren 1937
Need for using diluted inoculum when breeding for resistance is involved 2987 Thren 1937
Case of respiratory allergy 3248 Wittich and Stakman 1937
Effect of light and vernalization on infection 1632 Lasser 1938
Growth factors 2690, 2691 Schopfer and Blumer 1938
Modification of Moore's method of inoculation 2180 Oort 1939
As cause of hay fever and asthma 3246 Wittich 1939
Technique for differentiation from *Ustilago nigra* 2934 Tapke 1941
A distinct species from *Ustilago tritici* 2989 Thren 1941
Inoculation method 2722 Semeniuk and Ross 1942
Relation of percentage infection to yield reduction 2722 Semeniuk and Ross 1942
Use of male-sterile barley variety for purposes of combined hybridization and inoculation 2884 Suneson and Houston 1942
Morphologically indistinct from and therefore synonymous with *Ustilago tritici* 788 Fischer 1943

Badly contaminated seed unsuited for malting purposes 1897 Mead 1943
Hypodermic needle inoculation method 2334 Poehlman 1945
Rapid floral inoculation methods 3091 Vanderwalle 1945
Use of dry spores in hypodermic needle for inoculation 2738 Shands and Schaller 1946
Two methods for detecting mycelium in barley embryos 2755 Simmonds 1946
Prolonging viability by refrigeration 2940 Tapke 1948
Albino mutant 1882 Mastenbroek 1949
High pressure jet inoculation method 1989 Moore and Munecke 1949

PHYSIOLOGIC SPECIALIZATION
2512 Rodenhiser 1926
3009, 3010 Tisdale and Griffiths 1927
2513 Rodenhiser 1928
2087 Nahmmacher 1932
1983 Moore 1936
2988 Thren 1941

SPORE GERMINATION AND FACTORS AFFECTING
3252 Wolff 1874
313 Brefeld 1888
1447 Kellerman and Swingle 1890
2559 Rostrup 1890
1932 Miczynski 1893
3335 Zopf 1893
1158 Herzberg 1895
1763 McAlpine 1910
68 Appel and Riehm 1911
2655 Schellenberg 1911
2414 Rawitscher 1912
1615 Lang 1913
2489 Riehm 1914
1616 Lang 1917
2231 Paravicini 1917
2163 Novopokrovsky and Skaskin 1925
1791 Macrae 1930

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF
364 Broili 1910
365 Broili 1911
2087 Nahmmacher 1932
3319 Zeiner 1932
2987 Thren 1937
2181 Oort 1940
1934 Middleton and Chapman 1941
1727 Livingston 1942
2950 Taylor and Harlan 1943

2739 Shands 1946 (genetic linkage of resistance to loose smut and stem rust in barley)
2738 Shands and Schaller 1946 (tested 300 varieties)
2335 Poehlman 1947

USTILAGO ORNITHOGALI (Schmidt and Kunze) Magnus Hedwigia 14: 19. 1875.

Uredo ornithogali Schmidt and Kunze, Deut. Schwämme 217. 1816.
Caeoma ornithogali Schlecht., Fl. Berol. 2: 125. 1824.
Ustilago umbrina Schröt., Abh. Schles. Ges. Vat. Kult. 3. 1869.
Ustilago heterospora Niessl, Beitr. Kennt. Pilze. Verh. Natur. Vereins Brünn) 10: 158. 1872.
Ustilago ornithogali Kühn, Rabenh., Fung. Europ., 1996. 1875.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
496 Cocconi 1889
2872 Strohmeyer 1896
1148 Hennings 1903
2655 Schellenberg 1911

MISCELLANEOUS
Symptoms and morphology 2655 Schellenberg 1911
Hosts and morphology 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
496 Cocconi 1889

USTILAGO OXALIDIS Ell. and Tr. Jour. Mycol. 6: 77. 1890.

Ustilago oxalidis var. *major* Dietel and Neger, Hedw. Beibl. 37: 147. 1898.

MISCELLANEOUS
Morphology and symptoms 2655 Schellenberg 1911
First report from France and historical background 3120 Viennot-Bourgin 1932
Induced heterostyly 3066 Ubisch 1935
First report from Estonia. Probably introduced with the host 1652 Lepik 1937
Distribution in Europe 1653 Lepik 1937

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3066 Ubisch 1935

USTILAGO PANICI-FRUMENTACII Bref. Unters. Gesammt. Myk. 12: 103. 1895.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895
Comparison with *Ustilago paradoxa* 2057 Mundkur 1943
Effect on host 2057 Mundkur 1943
Revised description 2057 Mundkur 1943

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
2900 Sydow and Sydow 1911

USTILAGO PANICI-LEUCOPHAEI Bref. Unters. Gesammt. Myk. 12: 114. 1895.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO PARADOXA H. and P. Sydow and Butler Ann. Mycol. 9: 144. 1911.

CONTROL
1588 Kulkarni 1922

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1588 Kulkarni 1922

MISCELLANEOUS
Comparison with *Ustilago panici-frumentacea* 2057 Mundkur 1943
Effect on host 2057 Mundkur 1943
Importance in India 2057 Mundkur 1943
Revised description 2057 Mundkur 1943

SPORE GERMINATION
2900 Sydow and Sydow 1911
1588 Kulkarni 1922

USTILAGO PARAGUAYENSIS Speg. Anal. Soc. Cient. Argentina 17: 88. 1884.

MISCELLANEOUS
Historical background and comparison with other smuts of *Cynodon* 1830 Magnus 1899

USTILAGO PARLATOREI Fisch. v. Waldh. Hedwigia 15: 177. 1876.

Ustilago stygia Liro, Ann. Acad. Sci. Fenn. Ser. A, 17: 25. 1924.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
809 Fischer v. Waldheim 1877
2655 Schellenberg 1911

MISCELLANEOUS
Symptoms and morphology 2655 Schellenberg 1911
Hosts and morphology 1720 Liro 1924
Ustilago stygia considered synonym 1213 Hirschhorn 1947

SPORE GERMINATION AND FACTORS AFFECTING
809 Fischer v. Waldheim 1877

USTILAGO PARODII Hirschh. Darwinia 3: 404. 1939.

MISCELLANEOUS

Symptoms and morphology 1191 Hirschhorn 1939

SPORE GERMINATION AND FACTORS AFFECTING

1191 Hirschhorn 1939

USTILAGO PERENNANS Rostr. Overs. K. Danske Vid. Selsk. Forh. 1890: 15

Uredo segetum f. *decipiens* Wallr., Ann. Bot. 139. 1815. p.p.
Uredo segetum Fries, Om Brand och Rost Poa Waster. (Lund) 14. 1821. p.p.
Erysibe vera holci avenacei Wallr., Fl. Crypt. Germ. 4: 217. 1833.
Uredo segetum arrhenatherae Opiz, Seznan Rostlin Kvet. Ceske (Pflanz. Fl. Boehmens) 150. 1852. (nom. nud.)
Ustilago carbo vulgaris f. *avenaceae* Tul., Ann. Sci. Nat. Bot. III. 7: 80. 119. 1847.
Ustilago carbo Kühn, Krank. d. Kulturgew. 52. 1858. p.p.
Uredo segetum f. *avenae* Oud., Prodv. Fl. Bot. f. II. 4: 179. 1866. p.p.
Cintractia avenae Ellis and Tracy, Jour. Mycol. 6: 77. 1890.
Ustilago dura Appel and Gassner, Mitt. Kais. Biol. Anst. f. Land. Forstw. 4: 14. 1907.
Ustilago arrhenatheri Ferle, Korrespond. Nat. Ver. Riga 55: 1912.
Ustilago arrhenatheri Schellenberg, Ber. Deut. Bot. Ges. 33: 316. 1915.
Ustilago decipiens Liro, Ann. Acad. Sci. Fenn. A. 17: 95 and 445. 1924.

CONTROL

973 Gram 1929

CULTURE ON ARTIFICIAL MEDIA

1501 Kniep 1926
286 Boss 1927

CYTOLOGY

2231 Paravicini 1917
286 Boss 1927
1315 Hüttig 1933

HETEROTHALLISM AND SEX

803 Fischer v. Waldheim 1869 (copulation between promycelial cells, called "bow-shaped sporidia")
2231 Paravicini 1917
1501 Kniep 1926
286 Boss 1927
1315 Hüttig 1933
159 Bauch 1934

HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)
159 Bauch 1934 (sporidial fusions with multipolar species)
797 Fischer and Holton 1941 (inheritance of sorus characters in *Ustilago avenae* x *U. perennans*)
1251 Holton and Fischer 1941 (with *Ustilago avenae*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

62 Appel and Gassner 1907
1720 Liro 1924

2546 Rosch 1926
286 Boss 1927

MISCELLANEOUS

History and morphology 1720 Liro 1924

Closely similar to but not identical with *Ustilago avenae* 2546 Rosch 1926

Incidence in seed samples of tall oat grass 677 Dorph-Petersen 1931

First report from Argentina 2236 Parodi 1938

Differs from *Ustilago avenae* only in being perennial 2236 Parodi 1938

Comparative morphology with *Ustilago avenae* with which consolidation is recommended 788 Fischer 1943

SPORE GERMINATION AND FACTORS AFFECTING

3056 Tulasne and Tulasne 1847
1556 Kühn 1858
803 Fischer v. Waldheim 1869
2559 Rostrup 1890
1158 Herzberg 1895
684 Duggar 1901
62 Appel and Gassner 1907 (as *Ustilago dura*)
2655 Schellenberg 1911
2231 Paravicini 1917
1720 Liro 1924

USTILAGO PINGUICULAE Rostr. Ustilagineae Daniae p. 144. 1890

Ustilago antherarum Wint., Hedwigia 17: 98. 1878.
Ustilago violacea Wint., Die Pilze. I. p. 98. 1881. p.p.

CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

2655 Schellenberg 1911
1689 Lind 1913

PHYSIOLOGIC SPECIALIZATION

1689 Lind 1913

SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895
2655 Schellenberg 1911

USTILAGO PUSTULATA (DC.) Wint. Hedwigia 18: 109. 1880. (not *Ustilago pustulata* Tracy and Earle, 1895 on *Panicum* spp.)

Uredo bistortarum pustulata DC., Fl. Fr. 6: 76. 1815.
Uredo bistortarum Merat, Nouv. Fl. ed. I. 93. 1821.
Caeoma bistortarum Link, Sp. Pl. 2: 10. 1825.
Ustilago utriculosa Karsten, Enum. Fung. 222. 1866.
Tilletia bullata Fuck., Symb. Mycol. 40. 1869.
Ustilago bistortarum Körn., Hedwigia 16: 38. 1877.

Ustilago bistortarum Schröt., in Cohn, Beitr. Biol. Pflanz. 356. 1877.
Ustilago bullata var. *glabra* Rostr., Bot. Tidsskr. 15: 229. 1886.
Ustilago bistortarum var. *glabra* DeToni, Sacc. Syll. Fung. 7: 469. 1888.
Ustilago pustulata Bubak in Vestergren, Mic. rar. sel. 336. 1901.
Ustilago polygoni Bref., Unters. Gesammt. Myk. 15: 5. 1912.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2872 Strohmeyer 1896
2654 Schellenberg 1907
2655 Schellenberg 1911
1720 Liro 1924

MISCELLANEOUS
Comparison with related forms 1720 Liro 1924
History and morphology 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
716 Essmon 1893
315 Brefeld 1895
2655 Schellenberg 1911

USTILAGO RABENHORSTIANA Kühn Hedwigia 15: 4. 1876.

Caeoma syntherismae Schwein., Trans. Am. Phil. Soc. II. 4: 290. 1834.
Ustilago setariae Rabenh., in litt. et. sched. (non *Ustilago setariae* Rabenh. in Krypt. Exsicc. 902 and Univ. Itin. Krypt. 1866).
Ustilago destruens var. *digitaris* Sacc., Nuovo Giorn. Bot. Ital. 8: 167. 1876.
Ustilago cesati Fisch. v. Waldh., Apercu 25. 1877. p.p.
Ustilago syntherismae Auct. pp. Cooke in Grevillea 6: 138. 1878.
Ustilago digitariicola Speg., Anal. Mus. Nac. Buenos Aires III. 1: 57. 1902.

MISCELLANEOUS
Infected *Digitaria sanguinale* immune from *Piricularia grisea* 1034 Halsted 1899
Vegetative vigor much prolonged in infected *Digitaria sanguinale* as compared with uninfected plants 1034 Halsted 1899
Symptoms and morphology 2655 Schellenberg 1911
Longevity of spores; at least 8 years 779 Fischer 1936

SPORE GERMINATION AND FACTORS AFFECTING
311 Brefeld 1883
2159 Norton 1896
1191 Hirschhorn 1939 (as *Ustilago digitariicola*)
1517 Kolk 1943

USTILAGO READERI H. and P. Sydow (in letter 1905) McAlpine in Smuts of Australia 159. 1910.

Ustilago agropyri McAlpine, Agric. Gaz. New S. Wales 154. 1896.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1763 McAlpine 1910

MISCELLANEOUS
Symptoms and morphology 1763 McAlpine 1910

SPORE GERMINATION AND FACTORS AFFECTING
1763 McAlpine 1910
564 Cunningham 1924

USTILAGO RECHINGERI Sayul. Ann. Mycol. 35: 50–52. 1937.

MISCELLANEOUS

Morphology and comparison with other species on *Oryzopsis* 2630 Savulescu 1937

USTILAGO SACCHARI CILIARIS Bref. Unters. Gesammt. Myk. 12: 109. 1895.

CULTURE ON ARTIFICIAL MEDIA

315 Brefeld 1895

MISCELLANEOUS

Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING

315 Brefeld 1895

USTILAGO SCABIOSAE (Sow.) Wint. Rabenh. in Krypt. Fl. 1: 99. 1881.

Farinaria scabiosae Sow., Engl. fung. 3: Tab. 396, Fig. 2. 1803.
Uredo flosculorum DC., Fl. France 6: 76. 1815.
Caeoma flosculorum Link, in Willd., Sp. Pl. 6: 21. 1825.
Ustilago flosculorum Fries. Syst. Mycol. 3: 518. 1832.
Ustilago scabiosae Schröt., Krypt. Schles. 3: 272. 1889.

CULTURE ON ARTIFICIAL MEDIA

311 Brefeld 1883
1501 Kniep 1926
2690, 2691 Schopfer and Blumer 1938 (found to be auxo-heterotrophic)

CYTOLOGY

1072 Harper 1898
2231 Paravicini 1917

HETEROTHALLISM AND SEX

311 Brefeld 1883
2231 Paravicini 1917
1501 Kniep 1926

HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (sporidial fusions with other species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

801 Fischer v. Waldheim 1867
803 Fischer v. Waldheim 1869
3239 Winter 1879
2327 Plowright 1881
311 Brefeld 1883
2559 Rostrup 1890
1821 Magnus 1893
2655 Schellenberg 1911
1720 Liro 1924

MISCELLANEOUS

Effects on the host 1974 Molliard 1893
Effect of glucose asparagin concentration on copulation. Ability

to utilize different sources of carbon and nitrogen 237 Blumer and Schopfer 1940

SPORE GERMINATION AND FACTORS AFFECTING
801 Fischer v. Waldheim 1867
803 Fischer v. Waldheim 1869
3237 Winter 1876
2698 Schröter 1877
311 Brefeld 1883
2704 Schröter 1887
2333 Plowright 1889
2231 Paravicini 1917

USTILAGO SCAURA Liro (nom. nud.) Ann. Acad. Sci. Fenn. A. 17: 73. 1924.

Tilletia avenae Ule, Ver. Bot. Prov. Brand. 25: 214. 1884.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1720 Liro 1924

MISCELLANEOUS
History and morphology 1720 Liro 1924

USTILAGO SCITAMINEA H. and P. Sydow Ann. Mycol. 22: 281. 1924.

Ustilago sacchari Auct., pro Max., not Rabenh. nor Fischer v. Waldheim.

CONTROL
2744 Shepherd 1924
841 Francis 1938
1750 Luthra *et al.* 1940
748 Fawcett 1941
445 Chona 1943
1774 McMartin 1945
1883 Mathur 1945

CULTURE ON ARTIFICIAL MEDIA
749 Fawcett 1944

HOST RANGE
1774 McMartin 1945

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1553 Krüger 1899
15 Ajrekar 1916
589 Dastur 1920
2744 Shepherd 1924
1749 Luthra *et al.* 1938
445 Chona 1943
1205 Hirschhorn 1943
749 Fawcett 1944
1774 McMartin 1945
1883 Mathur 1945

MISCELLANEOUS

Comparison with other smuts of sugar cane and related grasses 470 Ciferri 1933

Serious on sugar cane in the Philippines 227 Bissinger 1934

Comparison with other smuts of sugar cane and related grasses 257 Boedijin 1935

Comparison with other sugar cane smuts 2054 Mundkur 1939

New variety (*Sacchari-barberi*) proposed. Second new variety (*Sacchari-officinarum*) proposed 2054 Mundkur 1939

In five-month old crop in Bihar 2401 Rafay and Padmanabhan 1940

Detection in Argentina 748 Fawcett 1941

First report from Argentina; comparison with other sugar cane smuts 1198 Hirschhorn 1941

Incidence in India 445 Chona 1943

Three species of insects constantly associated with sugar cane smut 1097 Hayward 1943

Geographic distribution in Argentina 1205 Hirschhorn 1943

Six groups by morphology of spores 1205 Hirschhorn 1943

Incidence in Natal, S. Africa 1774 McMartin 1945

Crisis in Argentine sugar industry 560, 561 Cross 1946, 1947

SPORE GERMINATION AND FACTORS AFFECTING

445 Chona 1943

749 Fawcett 1944

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

2744 Shepherd 1924

1646 Lee and Medalla 1931

556 Cross 1943

1205 Hirschhorn 1943

557, 558 Cross 1944

559 Cross 1945

USTILAGO SCITAMINEA Sydow var. SACCARI-BARBERI Mundkur Bull. Misc. Inf. Kew. 10: 529. 1939.

MISCELLANEOUS

Comparison with other sugar cane smuts and description of the variety 2054 Mundkur 1939

USTILAGO SCITAMINEA Sydow var. SACCHARI-OFFICINORUM Mundkur. Bull. Misc. Inf., Kew 10: 530. 1939.

MISCELLANEOUS

Description of variety and comparison with other sugar cane smuts 2054 Mundkur 1939

USTILAGO SCOLYMI Roumeguere and Trabut Fungi sel. Exsicc. 5129. 1890. Bull. Soc. Mycol. (France) 17: 257. 1901.

SPORE GERMINATION AND FACTORS AFFECTING

3279 Yen 1937

USTILAGO SCORZONERAE (Albert. and Schwein.) Schröt. Krypt. Schles. 3: 274. 1889.

Uredo tragopogi var. *scorzonerae* Albert and Schwein., Consp. Fung. Lusatiae 130. 1805.
Uredo receptaculorum DC., Encycl. Bot. 8: 228. 1803. p.p.
Uredo receptaculi Strauss, Ann. Wetter. Gesell. 2: 111. 1810. p.p.
Uredo tragopogonis Rohling, Sturm's Deutschland Fl. 3: 129. 1813. p.p.
Uredo receptaculorum f. *scorzonerae humilis* DC., Fl. Fr. 6: 79. 1815.
Erysibe receptaculorum f. *scorzonerae* Wallr., Fl. Crypt. Germ. 2: 214. 1833.
Microbotryum receptaculorum Lev., Ann. Sci. Nat. Bot. III. 8: 372, 376. 1847. p.p.
Ustilago receptaculorum Tul., IV. 2: pl. 12. fig. 34–40. 1854.

CULTURE ON ARTIFICIAL MEDIA
156 Bauch 1932
1528 Koudelka 1934 (from spore to spore in culture)

CYTOLOGY
2231 Paravicini 1917

HETEROTHALLISM AND SEX
2231 Paravicini 1917 (sporidial fusions)
156 Bauch 1932

HOST RANGE
2419 Rayss and Zwirn 1944 (*Scorzonera papposa*, new host, Palestine)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2704 Schröter 1887
315 Brefeld 1895
1148 Hennings 1903
2655 Schellenberg 1911
1720 Liro 1924
1528 Koudelka 1934

MISCELLANEOUS
Close relationship to *Ustilago tragopogi-pratensis* 1720 Liro 1924
Hosts and morphology 1720 Liro 1924
Effect of germinating spores on barley and rye. Reduced germination and dwarfed seedlings in barley plus profuse tillering. Caused "white ear" in oats (latent infection). Caused over three times as many tillers in rye, also very stunted 1528 Koudelka 1934

PHYSIOLOGIC SPECIALIZATION
1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
3057 Tulasne 1854
315 Brefeld 1895
2231 Paravicini 1917
1720 Liro 1924
156 Bauch 1932

USTILAGO SCUTULATA Liro Ann. Acad. Sci. Fenn. Ser. A. 17: 14. 1924.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1720 Liro 1924

MISCELLANEOUS
Hosts and morphology 1720 Liro 1924

PHYSIOLOGIC SPECIALIZATION
1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
1720 Liro 1924

USTILAGO SHIRAIANA P. Henn. Bot. Jahrb. (Engler) 28: 260. 1900.

Cintractia bambusae Miyabe and Hori, Bot. Mag. (Tokyo) 19: 199. 1905.

CONTROL
2247 Patterson and Charles 1916

CULTURE ON ARTIFICIAL MEDIA
1270 Hori 1905

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1270 Hori 1905
2247 Patterson and Charles 1916

MISCELLANEOUS
Morphology and symptoms 1270 Hori 1905
Morphology and symptoms 2247 Patterson and Charles 1916

USTILAGO SITANII G. W. Fischer Mycologia 30: 391. 1938.

SPORE GERMINATION AND FACTORS AFFECTING
780a Fischer 1938

USTILAGO SLADENII Pole-Evans Ann. Bolus Herb. 1: 115. 1915.

CONTROL
278 Borghardt 1932

USTILAGO SPEGAZZINII Hirschh. Notas Museo La Plata, Bot. 4: 415–419. 1939.

Ustilago hypodytes (Schlecht.) Fr., Syst. Mycol. 3: 518. 1832. p.p.
Ustilago stipae Cif., Ann. Mycol. 29: 52. 1931.

and

USTILAGO SPEGAZZINII var. AGRESTIS (Syd.) G. W. Fisch. and Hirschh. Mycologia 37: 242. 1945.

Ustilago hypodytes (Schlecht.) Fr., Syst. Mycol. 3: 518. 1832. p.p.
Ustilago agrestis Syd., Ann. Mycol. 22: 278. 1924.
Ustilago bromi-erecti Cif., Ann. Mycol. 29: 52. 1931.

Note: See also under *Ustilago hypodytes*. As shown by Fischer and Hirschhorn (795) several distinct smut fungi have been studied and observed for decades under the binomial *U. hypodytes*. In many instances it has been easy to relegate references to their proper specific category, but in the case of *U. spegazzinii* and the var. *agrestis* this was often impossible, particularly with regard to the older literature. Hence, the reader is referred also to the

literature classification under *U. hypodytes*. Many of the references given under that binomial are duplicated below also and many more undoubtedly pertain to *U. spegazzinii* or the variety *agrestis* rather than to *U. hypodytes* sensu Fischer and Hirschhorn. A complete bibliographic review of the stem smuts should include the references cited in both places.

CULTURE ON ARTIFICIAL MEDIA
280 Bornhövd 1936
CYTOLOGY
280 Bornhövd 1936
1211 Hirschhorn 1945
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
647 Dietel 1897 (as *Ustilago hypodytes* on *Agropyron repens*)
280 Bornhövd 1936 (on *Elymus arenarius*)
271 Bond 1940 (on *Elymus arenarius*)
789 Fischer 1945 (mode of infection and incubation period)
MISCELLANEOUS
Simultaneous with *Urocystis agropyri* on *Agropyron repens* 1564 Kühn 1874
Prevalence on giant wild rye in western states (as *Ustilago hypodytes*) 993 Griffiths 1903
Effect on host (*Elymus arenarius*) 280 Bornhövd 1936
Technical description and Latin diagnosis 1189 Hirschhorn 1939
Effect on host (*Elymus arenarius*) 271 Bond 1940
Comparison with other stem smuts on *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945
Host range and geographic distribution 796 Fischer and Hirschhorn 1945
Position in "*Ustilago hypodytes*" complex; comparison with other *Ustilago* spp. causing stem smut 795 Fischer and Hirschhorn 1945
SPORE GERMINATION AND FACTORS AFFECTING
280 Bornhövd 1936
1189 Hirschhorn 1939
1517 Kolk 1943 (as *Ustilago minima*)
795, 796 Fischer and Hirschhorn 1945

USTILAGO SPHAEROGENA Burrill (Ell. and Ev., N. Ann. Fungi 1892; hyponym 1887); Sacc. Syll. 7: 468. 1888.

Cintractia sphaerogena Hume, Proc. Iowa Acad. Sci. 9: 233. 1902.

CULTURE ON ARTIFICIAL MEDIA
1871 Martin and Kernkamp 1941
MISCELLANEOUS
Comparative morphology with *Ustilago globigena* 1191 Hirschhorn 1939

USTILAGO SPINIFICIS Ludwig Zeitschr. Pflanz. 3: 138. 1893.

Cintractia spinificis McAlp., Smuts of Australia 174. 1910.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895
1763 McAlpine 1910
2193 Qsborn 1922
MISCELLANEOUS
Morphology 315 Brefeld 1895
Symptoms and morphology 1763 McAlpine 1910
Pathological morphology 2193 Osborn 1922
SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
1763 McAlpine 1910
564 Cunningham 1924

USTILAGO STRIIFORMIS (Westend.) Niessl Hedwigia 15: 1. 1876.

Ustilago salveii Berk. and Br., Ann. Nat. Hist. II. 5. 463. 1850.
Uredo striaeformis Westend., Bull. Acad. Roy. Belg. 18: 406. 1852.
Tilletia de-Baryana Fisch. v. Waldh. in Rabenh., Fungi Europ., 1498. 1866.
Tilletia milii Fuck., Symb. Mycol. 1: 40. 1869.
Tilletia striaeformis Oud., Bot. Ztg. 46: 441. 1878.
Tilletia alopecurivora Ule., Verh. Bot. Ver. Prov. Brand. 25: 214. 1884.
Tilletia brizae Ule, Verh. Bot. Ver. Prov. Brand. 25: 214. 1884.
Ustilago poarum McAlp., Proc. Roy. Soc. Victoria n.s. 7: 220. 1894.
Ustilago washingtoniana Ell. and Ev., Bull. Torrey Bot. Club 22: 57. 1895.
Ustilago festucarum Liro, Ann. Acad. Sci. Fenn. A. 17: 77. 1924.
Ustilago scaura Liro, Ann. Acad. Sci. Fenn. A. 17: 73. 1924.
Ustilago bromina Syd., Ann. Mycol. 22: 277 1924.
Ustilago agrostis-palustris W. H. Davis, Cif. in Ann. Mycol. 29: 54. 1931.
Ustilago phlei-pratensis W. H. Davis, Cif. in Ann. Mycol. 29: 55. 1931.
Ustilago phlaridis Cif., Ann. Mycol. 29: 59. 1931.
Ustilago johnstonii Cif., Nuovo Giorn. Bot. Ital. II. 40: 261. 1933.
Ustilago elymicola Syd., Ann. Mycol. 32: 286. 1934.
Ustilago striaeformis f. *hierochloae-odoratae* Sav. and Rayss, Ann. Inst. Rech. Agron. Roumanie 7: 14. 1936.
Ustilago poae S. Ito, Mycol. Fl. Japan 2: 33. 1936.
Ustilago hierochloae-odoratae Cif., Fl. Ital. Crypt. (Ustilaginales) 17: 344. 1938.
Ustilago loliicola Cif., Fl. Ital. Crypt. (Ustilaginales) 17: 345. 1938.
Ustilago taenia Cif., Fl. Ital. Crypt. (Ustilaginales) 17: 346. 1938.

CONTROL
2211 Pammel 1890
2195 Osner 1916
2816 Stakman and Lambert 1923 (copper carbonate dust ineffective for timothy stripe smut)
1007 Güssow and Conners 1927
1544 Kreitlow 1947
CULTURE ON ARTIFICIAL MEDIA
783 Fischer 1940
1538 Kreitlow 1943

1641, 1642, 1643 Leach *et al.* 1946
2972 Thirumalachar and Dickson 1947

CYTOLOGY
2195 Osner 1916
2732 Seyfert 1927
1642, 1643 Leach and Ryan 1946

HETEROTHALLISM AND SEX
783 Fischer 1940
1642, 1643 Leach and Ryan 1946
792 Fischer 1947

HYBRIDIZATION AND GENETICS
794 Fischer 1948 (with *Ustilago bullata*)

MISCELLANEOUS
First record, as *Uredo longissima* var. *holci* (exsicatti) 429 Cesati 1850
Severe incidence in timothy in Iowa 2214 Pammel 1892
Severe incidence in timothy in Iowa 2217 Pammel 1893
Severity in timothy in California 993 Griffiths 1903
Symptoms and morphology 2655 Schellenberg 1911
Complete synonymy to date 2195 Osner 1916
Host range 2195 Osner 1916
Intraseminal infection 2195 Osner 1916
Perennial nature of fungus in the host 2221 Pammel 1920
As a composite species 1720 Liro 1924
History and morphology 1720 Liro 1924
Host range 1720 Liro 1924
Clamp connections on the mycelium 2732 Seyfert 1927
Hystrix hystrix (*H. patula*) new host 1395 Johnston 1931
Host range 783 Fischer 1940
Factors influencing after-ripening of spores 1542 Kreitlow 1944
Prevalence and distribution on *Poa pratensis* in Pennsylvania pastures and methods of sampling pastures to determine 1547 Kreitlow and Meyers 1944
Morphology and comparison with other stripe smuts 796 Fischer and Hirschhorn 1945
Factors influencing after-ripening of spores 1543 Kreitlow 1945
Comparative nomenclatorial validity with *Ustilago linearis* and *U. salvei* and the preference for *U. striiformis* 2847 Stevenson 1946
Nomenclatorial background 2847 Stevenson 1946
Importance on bluegrass 3194 Wellhausen *et al.* 1946

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
803 Fischer v. Waldheim 1869
2554 Rostrup 1885
2872 Strohmeyer 1896
479 Clinton 1900
1689 Lind 1913

2195 Osner 1916
602 Davis 1923
603 Davis 1924
1720 Liro 1924 (as *Ustilago salveii*)
604 Davis 1926
1007 Güssow and Conners 1927
783 Fischer 1940
1539, 1541 Kreitlow 1943 (temperature as a factor)
1641 Leach *et al.* 1946
1544 Kreitlow 1947 (seed transmission)

PHYSIOLOGIC SPECIALIZATION

1720 Liro 1924 (as *Ustilago salveii*)
605 Davis 1928
607, 608 Davis 1930
609 Davis 1935
783 Fischer 1940

SPORE GERMINATION AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869
2217 Pammel 1893
479 Clinton 1900
684 Duggar 1901
2224 Pammel *et al.* 1901
2195 Osner 1916
602 Davis 1923
603 Davis 1924
1720 Liro 1924
783 Fischer 1940
1539, 1541 Kreitlow 1943 (temperature and the after-ripening period)
1544 Kreitlow 1944 (after ripening)
796 Fischer and Hirschhorn 1945
1543 Kreitlow 1945 (after ripening)
1641 Leach *et al.* 1946
2972 Thirumalachar and Dickson 1947

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

606 Davis 1929
783 Fischer 1940

USTILAGO STYGIA Liro Ann. Acad. Sci. Fenn. A. 17: 25. 1924.

Ustilago kühneana Bref., Unters. Gesammt. Myk. 5: 83. 1883. Taf. V. fig. 12–20. p.p.
Ustilago kühneana Fisch. v. Waldh., Nuovo Giorn. Bot. Italy 9: 158. 1877. p.p.
Ustilago kühneana Fisch. v. Waldh., Ann. Sci. Nat. Bot. VI. 4: 225. 1877. p.p.
Ustilago kühneana Fisch. v. Waldh., Bull. Soc. Imp. Nat. Moscow. 52: 328. 1877. p.p.
Ustilago kühneana Bubak, Houby Ceske, 2: 20. 1912; 2: 20. 1916. p.p.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
311 Brefeld 1883
1720 Liro 1924
MISCELLANEOUS
History, hosts and morphology 1720 Liro 1924
Considered to be synonym of *Ustilago parlatorei* 1213 Hirschhorn 1947
SPORE GERMINATION AND FACTORS AFFECTING
311 Brefeld 1883

USTILAGO SUSSISIAE P. Magnus Hedwigia 14: 17. 1875.
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1809 Magnus 1875
1148 Hennings 1903
2655 Schellenberg 1911
SPORE GERMINATION AND FACTORS AFFECTING
1808 Magnus 1875

USTILAGO THLASPEOS (Beck) Lagerh. Bot. Notiser 1899. 172.
Tilletia thlaspeos Beck, Ver. Zool.-Bot. Geo. (Wien) 35: 362. 1886.
LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
1422 Juel 1894
2655 Schellenberg 1911
MISCELLANEOUS
Symptoms and morphology 2655 Schellenberg 1911
Hosts and morphology 1720 Liro 1924
SPORE GERMINATION AND FACTORS AFFECTING
1422 Juel 1894
315 Brefeld 1895

USTILAGO TOGATA Liro Ann. Acad. Sci. Fenn. A. 17: 183. 1924.
Ustilago pustulata Tracy and Earle, Bull. Torrey Bot. Club 22: 175. 1895.
SPORE GERMINATION AND FACTORS AFFECTING
1517 Kolk 1943

USTILAGO TRAGOPOGI-PRATENSIS (Pers.) Roussel. Fl. Calvados ed. II. 47. 1806.
Uredo tragopogi-pratensis Pers., Tenta. Dispos. Method. Fung., 57. 1797.
Uredo tragopogi-pratensis Pers., Synop. Method. Fung. 225. 1801.
Uredo tragopogi-pratensis Schumacher in Enum. Plant. Saell. 2: 234. 1803.
Uredo receptaculorum DC., in Lamarck Encyclop. Method. Bot. 8: 228. 1808.
Uredo receptaculi Strauss, Ann. Wetterausch. Ges. Nat. 2: 111. 1810.
Uredo receptaculorum Link, Sp. Pl. 6: 17. 1825.
Ustilago receptaculorum (*tragopogi*) Tul., Ann. Sci. Nat. IV. 2: 2. 1854.
Microbotryum receptaculorum Lev., Ann. Sci. Nat. III. 8: 372. 1847.
Ustilago tragopogi-pratensis Wint., Rabenh. Krypt. Fl. 1: 101. 1886.
Ustilago tragopogonis Schröt., Krypt. Schles. 274. 1889.
CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883
750, 751 Federley 1904

1501 Kniep 1926
1528 Koudelka 1934 (from spore to spore in culture)

CYTOLOGY
579 Dangeard 1892
762 Ferry 1895
750, 751 Federley 1904
2414 Rawitscher 1912
2231 Paravicini 1917

HETEROTHALLISM AND SEX
803 Fischer v. Waldheim 1869 (fusion of sporidia)
311 Brefeld 1883 (fusion of sporidia)
579 Dangeard 1892
762 Ferry 1895
750, 751 Federley 1904
2414 Rawitscher 1912
2231 Paravicini 1917 (sporidial fusions)
1501 Kniep 1926

HYBRIDIZATION AND GENETICS
1501 Kniep 1926 (fusions with other species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3056 Tulasne and Tulasne 1847
803 Fischer v. Waldheim 1869
311 Brefeld 1883
619 DeBary 1884
579 Dangeard 1892
762 Ferry 1895
2414 Rawitscher 1912
1720 Liro 1924
1528 Koudelka 1934

MISCELLANEOUS
Morphology and symptoms 311 Brefeld 1883
Morphology and symptoms 2655 Schellenberg 1911
Host range and morphology 1720 Liro 1924
Effect of germinating spores on barley seedlings, rye and oats: reduced germination and stunted seedlings in barley, plus profuse tillering; three times normal tillers in rye and often much stunting; "white ear" (latent infection) in oats 1528 Koudelka 1934

SPORE GERMINATION AND FACTORS AFFECTING
3057 Tulasne 1854
616 DeBary 1866
803 Fischer v. Waldheim 1869
311 Brefeld 1883
619 DeBary 1884
2329 Plowright 1889
579 Dangeard 1892
750, 751 Federley 1903

2414 Rawitscher 1912
2231 Paravicini 1917

USTILAGO TRITICI (Pers.) Rostr. Overs. Danske. Vid. Selsk. Forh. 15: Mar. 1890.

Uredo segetum subsp. *tritici* Pers., Syn. Fung. 1: 224. 1801.
Uredo carbo f. *tritici* DC., Fl. France 6: 76. 1815.
Ustilago segetum Ditmar, Sturm's Deutschland Fl. 1: 67. 1816.
Caeoma segetum Link, in Willdenow, Sp. Pl 6: 1. 1825. p.p.
Erysibe vera f. *tritici* Wallr., Fl. Crypt. Germ. 2: 217. 1833.
Uredo carbo-tritici Philippar, Me. Soc. Roy. Agric. Arts Seine-et-Oise 37: 197. 1837.
Ustilago carbo vulgaris triticea Tul., Ann. Sci. Nat. Bot. III, 7: 80. 1847.
Ustilago segetum var. *tricici* Jensen, Øm Korns. Brand. 61. 1881.
Ustilago segetum var. *tritici* Jensen, Jour. Roy. Agric. Soc. England II, 24: 407. 1888.
Ustilago hordei Bref., Nach. Klub. Landw. (Berlin) 1593, 1888. p.p.
Ustilago tritici Jensen, in Kell. and Sw., Ann. Rept. Kans. Expt. Sta. 2: 262. June, 1890.
Ustilago tritici foliicola P. Henn., Zeitschr. f. Pflanzenk. 4: 139. 1894.
Ustilagidium tritici Herzberg, in Zopff, Beitr. Phys. Morph. Nied. Org. 139. 1895.
Ustilago vavilovi de Jacz., Ann State Inst. Expt. Sta. III, 2–4: 106–109. 1925.

CONTROL

374 Bryant 1783
95 Arthur 1890
1447 Kellerman and Swingle 1890
489 Cobb 1891
100 Arthur 1901
2541, 2542 Rommetin 1902
2879 Stuart 1902 (resistance of spores to formalin and hot water)
3025 Toporkow 1903
863 Frölich 1908
851 Freeman and Johnson 1909
2173 Oetken 1909
2300 Piardi 1909
67 Appel and Riehm 1910
2650 Schander 1910
68, 69 Appel and Riehm 1911
2862 Störmer 1911
71 Appel and Riehm 1912
2651 Schander 1912
2864 Störmer 1912
72 Appel and Riehm 1914
2386 Quanjer and Batjes 1915
1901 Melchers 1916
1924 Mercer 1916
2314 Pipal 1921
985 Gregory 1922
1186 Hiltner and Lang 1922

114 Ausborn 1923
2556 Schitikova 1923
2915 Tapke 1923
1009 Guyot 1924
2096 Neill 1924
2666 Schitikova 1924
2916 Tapke 1924
987 Gregory 1925
1010 Guyot 1925
2097 Neill 1925
2526 Rodenhiser and Stakman 1925
776 Fischer and Belmonte 1926
325 Brentzel 1926
512 Conners 1926
2291 Petri 1926
2540 Rohweder 1926
2913 Tamm and Husfeld 1926 (use of electric hot water seed-steeper)
963 Gorshtosharuk 1927
1007 Güssow and Conners 1927
1648 Leidner 1927
1308 Hurst 1928
973 Gram 1929
1854 Marchionatto 1929 (hot air treatment)
2008 Morris and Kurtz 1929
2918 Tapke 1929
9 Abramoff 1930
11 Adam and Prescott 1931
2276 Petit 1931 (through production of seed wheat in low humidity smut-free areas)
2919 Tapke 1931
916 Gassner 1933
921 Gassner and Kirchoff 1933
2279 Petit 1933
922 Gassner and Kirchoff 1934
1747, 1748 Luthra and Sattar 1934
2029 Mourashkinsky 1934
2178 Oort 1934 (new hot-water method)
1058 Hanna and Popp 1935
3311 Zalessky 1935 (anaerobic treatment)
924 Gassner and Kirchoff 1936
1594 Kuprianoff and Proyda 1936
1965 Mitra and Taslim 1936 (solar energy and sun-heated water)
2179 Oort 1936
2284 Petit 1936
3092 Vanderwalle and Larose 1936
3135 Visser 1936

2285, 2286, 2287 Petit 1937
3024 Toomre 1938
3136 Vladimirskaya 1938
1005 Guillochon 1939
1408 Jones 1939
2288 Petit 1939
434 Chester 1940 (portable hot water seed treater)
273 Bonne 1941 (use of hot water method under anaerobic conditions)
1746 Luthra 1941 (use of solar heat)
1627 Larose 1946
2997 Timonin 1946 (efficacy of the antibiotic, patulin)
2705 Schuk 1947

CULTURE ON ARTIFICIAL MEDIA
68 Appel and Riehm 1911
2621 Sartoris 1924
1501 Kniep 1926
2512 Rodenhiser 1926
2513 Rodenhiser 1928
1313 Hüttig 1931
450 Christensen 1935
1620 Lange de la Camp 1936
1690, 1691 Schopfer and Blumer 1938 (auxo-autotrophic)
2762 Skvortzoff 1938
1433 Keil 1940

CYTOLOGY
1447 Kellerman and Swingle 1890
1751 Lutman 1910
2231 Paravicini 1917
2416 Rawitscher 1922
2587 Ruttle 1934
1620 Lange de la Camp 1936
2989 Thren 1941 (cytology of the dicaryophase)

HETEROTHALLISM AND SEX
1501 Kniep 1926
1313 Hüttig 1931
450 Christensen 1935
1620 Lange-de la Camp 1936
1622 Lange-de la Camp 1940
2989 Thren 1941

HOST RANGE
1295 Humphrey and Tapke 1925 (incidence on rye and artificial infection of rye)
780a Fischer 1938 (natural occurrence on *Agropyron sibiricum*)

HYBRIDIZATION
1501 Kniep 1926 (incomplete hybrid with *Ustilago hordei* and *U. bullata*)

2989 Thren 1941 (copulation with *Ustilago nuda*)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

374 Bryant 1783
1022 Hallier 1867
803 Fischer v. Waldheim 1869
1447 Kellerman and Swingle 1890
1158 Herzberg 1895
1792 Maddox 1895 (probably first demonstration of intraseminal infection)
1794 Maddox 1897 (early demonstration of intraseminal infection)
989 Grenfell 1900
318 Brefeld 1903 (early demonstration of intraseminal infection)
1120 Hecke 1904 (early demonstration of intraseminal infection)
322 Brefeld and Falk 1905
1121 Hecke 1905
1122 Hecke 1906
2868 Strampelli 1906
62 Appel and Gassner 1907
319 Brefeld 1907
1271 Hori 1907 (early demonstration of intraseminal infection)
851 Freeman and Johnson 1909
2968 Theomin 1909
1614 Lang 1910
1763 McAlpine 1910
68 Appel and Riehm 1911
71 Appel and Riehm 1912
321 Brefeld 1912
1615 Lang 1913
72 Appel and Riehm 1914
2488 Riehm 1914
1616 Lang 1917
865 Fromme 1920
1720 Liro 1924
1007 Güssow and Conners 1927
1529 Koursanow 1926 (influence on physiology of the host)
2308 Piekenbrock 1927
1530 Koursanow 1928 (influence on physiology of the host)
2948 Taylor 1928
2917, 2918 Tapke 1929
2276 Petit 1931
2919 Tapke 1931
2537 Roemer and Kamlah 1932
2587 Ruttle 1934
2747 Sidorin *et al.* 1935
3124 Viennot-Bourgin 1935

1620 Lange-de la Camp 1936
1628 Larose and Vanderwalle 1937
3126 Viennot-Bourgin 1937
2180 Oort 1939
1622 Lange-de la Camp 1940
2181 Oort 1940
2182 Oort 1940
3089 Vanderwalle 1940
273 Bonne 1941
2989 Thren 1941
3090 Vanderwalle 1942
214 Bever 1943
3091 Vanderwalle 1945

MISCELLANEOUS

Early history 1447 Kellerman and Swingle 1890
Longevity (barely a year) 318 Brefeld 1903
Symptoms and morphology 1763 McAlpine 1910
Longevity (barely a year) 2231 Paravicini 1917
Combined control with *Tilletia caries* 2040 Müller *et al.* 1923
Hosts and history 1720 Liro 1924
Completion of life cycle on artificial media 2621 Sartoris 1924
Spontaneous occurrence of buff type 410 Campagna 1925
Severe occurrence in Indiana 987 Gregory 1925.
Seed grading no means of control 2098 Neill 1925
Varietal differences in expression of smut sori 2994 Tiemann 1925
Incidence in North Dakota 325 Brentzel 1926
Chlamydospores developed in culture 2512 Rodenhiser 1926
Morphologically indistinct from *Ustilago nuda,* therefore synonymous 2512 Rodenhiser 1926
Incidence on leaf sheaths 899 Garbowski 1927
Rare in Ireland 2079 Murphy 1927
Inoculation device 2308 Piekenbrock 1927
Distribution of mycelium in host and anatomical changes caused 1496 Klushnikova 1928
Not a distinct species from *Ustilago nuda* 2513 Rodenhiser 1928
Production of chlamydospores in culture 2513 Rodenhiser 1928
Three to four times as many smutted heads from small seeds as from large 2948 Taylor 1928
Inoculation method 2871 Stringfield 1929
Factors involved in resistance 2917 Tapke 1929
Seed from fields with loose smut can be planted with safety provided hot water treatment is given 1931 Meyer-Bahlburg 1930
Factors for sex segregated independently of cultural characters 1313 Hüttig 1931
Type of germination markedly influenced by temperature 1313 Hüttig 1931

Competition with *Tilletia caries* on same host plant 2073 Munerati 1931
Influence of humidity on floral infections 2919 Tapke 1931
Chemical composition of the spores 412 Campanile 1932
Virulence of the fungus influenced by selective action of the host 2537 Roemer and Kamlah 1932
A simple, easy inoculation method 1944 Milan 1933
Flotation method of separating out infected grains 3312 Zalessky and Wasjuta 1933
Fresh spores germinate less readily than those kept at room temperature for several days 704 Enomoto 1934
Stimulatory effects of ether 704 Enomoto 1934
Known to exist in California since 1832 1139 Hendry and Hausen 1934
Correlation of lodicule size with smut reaction 2947 Tavcar 1934
Influence on development and habit of host 386 Buchheim 1935
Freezing of infected seeds has no effect on development of the pathogen or host 387 Buchheim 1935
Method of obtaining haploid cultures equivalent to monosporidial cultures 450 Christensen 1935
Wheat plants containing mycelium more sensitive to light but less sensitive to gravity 1979 Montemartini 1935
Effect of late sowing on development of smut 2747 Sidorin *et al.* 1935
Sporulation in leaf tissues 3124 Viennot-Bourgin 1935
Pathological anatomy of leaves and flower parts 3124 Viennot-Bourgin 1935
Relation of water absorption by seed and embryo efficacy of hot water treatment 924 Gassner and Kirchoff 1936
Differential staining of living and dead spores with neutral red 1335 Jablokova 1936
Simultaneous occurrence with *Tilletia caries* 1946 Milan 1936
Ustilago tritici suppresses development of *Tilletia caries* when same plant infected by both 1946 Milan 1936
Portable evacuation equipment and method for field inoculations 1981, 1982 Moore 1936
Extent of surface contamination of seed not necessarily indication of actual amount of internal infection 2284 Petit 1936
Method of isolating from infected wheat seeds 382 Bubentzoff 1937
Foliar symptoms 999 Grodsinsky 1937
Detection of loose smut before heading 2592 Sabourova 1937
Detection of hyphae in seed wheat 2761 Skvortzoff 1937
Pathological changes induced in the host 3126 Viennot-Bourgin 1937
Case of respiratory allergy 3248 Wittich and Stakman 1937
Adverse effects of vernalization 3336 Zuhr 1937

Toxicity of spores to mice 620 Debre and Nevot 1938
Competition with *Tilletia caries* results in marked suppression of the latter 1046 Hanna 1938
Simultaneous occurrence with *Tilletia caries* and ergot in same heads of wheat 1046 Hanna 1938
Growth factors 2690, 2691 Schopfer and Blumer 1938
Cardinal temperatures 2762 Skvortzoff 1938
Relation of smut to tillering 1948 Milan 1939
Inoculation method (a modification of Moore's [1981] method) 2180 Oort 1939
Anatomical and morphological changes induced 2593 Sabourova 1939
As cause of hay fever and asthma 3246 Wittich 1939
Differential response of mycelium to ultra-violet irradiation 3270 Yablokova 1939
Aerial dissemination 2182 Oort 1940
Physiological modifications induced in host 2594 Sabourova 1940
Geographic distribution 273 Bonne 1941
A distinct species from *Ustilago nuda* 2989 Thren 1941
Morphologically indistinct from and therefore synonymous with *Ustilago nuda* 788 Fischer 1943
Extreme hypersensitivity of resistant varieties 2183 Oort 1944
Detection of live mycelium by fluorescent microscopy 3271 Yablokova 1944
Rapid floral inoculation method 3091 Vanderwalle 1945
Relation of percentage infection to yield and reduction 509 Compton and Caldwell 1946
Two methods for detecting presence of mycelium in embryos of wheat seed 2755 Simmonds 1946
Fungicidal and fungistatic activity of antibiotic, patulin 2997 Timonin 1946
High pressure jet inoculation method 1989 Moore and Munnecke 1949

PHYSIOLOGIC SPECIALIZATION

2512 Rodenhiser 1926
2308 Piekenbrock 1927
2513 Rodenhiser 1928
2917 Tapke 1929
991 Grevel 1930
1055 Hanna and Popp 1932
2397 Radulescu 1935
1983 Moore 1936
1045 Hanna 1937
405 Caldwell and Compton 1940
2988 Thren 1941
1985 Moore 1942
214 Bever 1943

216 Bever 1947
2184 Oort 1947
1986 Moore 1948

SPORE GERMINATION AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869
313 Brefeld 1888
1447 Kellerman and Swingle 1890
2559 Rostrup 1890
489 Cobb 1891
3269 Wutrich 1892
1931 Miczynski 1893
315 Brefeld 1895
1158 Herzberg 1895
55 Appel 1909
1614 Lang 1910 (promycelium emerges through germ pore)
1763 McAlpine 1910
2230 Paravicini 1916
2231 Paravicini 1917 (promycelium emerges through crack in spore wall)
2291 Petri 1926 (effect of pH and heat on)
2308 Piekenbrock 1927
1313 Hüttig 1931 (influence of temperature)
1433 Keil 1940

VARIETAL RESISTANCE AND SUSCEPTIBILITY, AND INHERITANCE OF

95 Arthur 1890
318 Brefeld 1903
62 Appel and Gassner 1907
851 Freeman and Johnson 1909
1141 Henning 1909
533 Coons and Spragg 1918
866 Fromme 1921
2728 Sessous 1925
867 Fromme 1926
2994 Tiemann 1926
2917 Tapke 1929
2138 Nieves 1930 (same varieties resistant also to *Tilletia caries* and *T. foetida*)
2277 Petit 1931
90 Artemoff 1933
1466 Kilduff 1933
2075 Munerati 1933
3000 Tingey and Tolman 1934
2579 Rudorf and Rosenstiel 1934
834 Fomin 1935
2397 Radulescu 1935
1628 Larose and Vanderwalle 1937
1949 Milan 1939

405 Caldwell and Compton 1940
2181 Oort 1940
2064 Mundkur and Pal 1941
3226 Wingard 1941
3227 Wingard and Fromme 1941
3090 Vanderwalle 1942
108 Atkins 1943
2183 Oort 1944
2206 Pal and Mundkur 1945
109 Atkins *et al.* 1947
406 Caldwell and Compton 1947
2184 Oort 1947
3284 Yin 1948

USTILAGO ULEI P. Henn. Hedwigia 34: 88. 1895.

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
315 Brefeld 1895

MISCELLANEOUS
Morphology 315 Brefeld 1895

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895

USTILAGO UNDERWOODII Zundel Ustilaginales of the World
Ustilago hypodytes (Schlecht.) Fries, in North Am. Fl. 7: 978. 1939. p.p.

SPORE GERMINATION AND FACTORS AFFECTING
1517 Kolk 1943

USTILAGO UTRICULOSA (Nees) Unger Einfl. Bod. 211. 1836.

Caeoma utriculosum Nees, Syst. Pilze 1: 14. 1817.
Uredo utriculosa Duby, in DC., Bot. Gall. 2: 901. 1830. p.p.
Ustilago utriculosum Fries, Syst. Mycol. 3: 519. 1832.
Erysibe utriculosa Wallr., Fl. Crypt. Germ. 2: 216. 1833. p.p.
Ustilago utriculosum Fries, Summa Veg. Scand. 516. 1846. (Name only.)
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Sporisorum muricatum Cesati, Klotz. Rab. Herb. Viv. Myc. Fungi, 1693. 1852.
Ustilago reticulata Liro, Ann. Acad. Sci. Fenn. A, 17: 20. 1924.
Ustilago muricata Liro, Ann. Acad. Sci. Fenn. A, 17: 238. 1924.
Ustilago cordai Liro, Ann. Acad. Sci. Fenn. A, 17: 12. 1924.
Ustilago controversa Cif., Ann. Mycol. 29: 41. 1931.
Ustilago persicariae Cif., Ann. Mycol. 29: 41. 1931.

CULTURE ON ARTIFICIAL MEDIA
1501 Kniep 1926

HETEROTHALLISM AND SEX
2902 Sydow and Butler 1907 (fusion of sporidia)
1501 Kniep 1926

HYBRIDIZATION AND GENETICS
1501 Kniep 1926 (sporidial fusions with other species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3056 Tulasne and Tulasne 1847
1720 Liro 1924 (as *Ustilago reticulata* and *U. cordai*)

MISCELLANEOUS
Morphology 315 Brefeld 1895
Morphology and effect on host 2655 Schellenberg 1911
History and morphology 1720 Liro 1924
Reasons for untenability of binomial *Ustilago utriculosa* 1720 Liro 1924
Wheat contaminated with spores and docked as contaminated with *Tilletia caries* or *T. foetida* 5 Aamodt and Malloch 1932

PHYSIOLOGIC SPECIALIZATION
1720 Liro 1924 (as *Ustilago reticulata, U. muricata,* and *U. cordai*)

SPORE GERMINATION AND FACTORS AFFECTING
3253 Wolff 1874
2704 Schröter 1887
2329 Plowright 1889
315 Brefeld 1895
2902 Sydow *et al.* 1907
1763 McAlpine 1910
1720 Liro 1924 (as *Ustilago cordai*)
796 Fischer and Hirschhorn 1945

USTILAGO VAILLANTII Tul. Ann. Sci. Nat. III, 7: 90. 1847.

Ustilago vaillantii Schröt., Hedwigia 15: 109. 1876.
Ustilago scillae Cif., Ann. Mycol. 29: 24. 1931.

CULTURE ON ARTIFICIAL MEDIA
315 Brefeld 1895

CYTOLOGY
1880 Massee 1914
2231 Paravicini 1917

HETEROTHALLISM AND SEX
2231 Paravicini 1917 (copulation between sporidia)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
803 Fischer v. Waldheim 1869
538 Cornu 1878
942 Giard 1889
1801 Magnin 1890
1804 Magnin 1891
1803 Magnin 1891
1805 Magnin 1892
315 Brefeld 1895
2655 Schellenberg 1911
591 Davie and Wilson 1914
1880 Massee 1914
1842 Maire 1917

MISCELLANEOUS
Morphology 315 Brefeld 1895
Host range and history 1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
2698 Schröter 1877
619 DeBary 1884
2003 Moroni 1886
1877 Massee 1893
315 Brefeld 1895
2655 Schellenberg 1911
2231 Paravicini 1917

USTILAGO VINOSA (Berk.) Tul. Ann. Sci. Nat. Bot. III, 7: 96. 1847.

Uredo vinosa Berk., in litt. Tul. Ann. Sci. Nat. Bot. III, 7: 96. 1847.

CULTURE ON ARTIFICIAL MEDIA
1501 Kniep 1926

HETEROTHALLISM AND SEX
315 Brefeld 1895 (sporidial fusions and formation of infection hyphae)
1501 Kniep 1926

HYBRIDIZATION AND GENETICS
1501 Kniep 1926 (hybridization with other species)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2563 Rostrup 1891
1720 Liro 1924

MISCELLANEOUS
Pathological histology 579 Dangeard 1892
Morphology 315 Brefeld 1895
Morphology and symptoms 2655 Schellenberg 1911

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
1720 Liro 1924

USTILAGO VIOLACEAE (Pers.) Rouss. Fl. Calvados ed. II, 47. 1806.

Uredo violaceae Pers., Teut. Disp. Fung. 57. 1797.
Uredo violaceae Pers., Syn. Meth. Fung. 225. 1801.
Faranaria stellariae Sowerby, Engl. Fungi. tab. 396. fig. 1. 1803.
Uredo antherarum DC., Fl. France 6: 79. 1815.
Caeoma violaceum Nees., Syst. Pilze 1: 14. 1817.
Caeoma violacea Martius, Fl. Crypt. Erl. 315. 1817.
Caeoma antherarum Schlecht., Fl. Ber. 2: 130. 1824.
Ustilago antherarum Fries, Syst. Mycol. 3: 518. 1832.
Erysibe antherarum Wallr., Fl. Crypt. Germ. 2: 217. 1833.
Microbotryum antherarum Lev., Ann. Sci. Nat. Bot. III. 8: 372. 1847.
Ustilago violacea Fuck., Jahrb. Nassau. Ver. Naturk. 15: 21. 1861.
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Ustilago dianthorum Liro, Ann. Acad. Sci. Fenn. A, 17: 35. 1924.
Ustilago superba Liro, Ann. Acad. Sci. Fenn. A, 17: 37. 1924.
Ustilago coronariae Liro, Ann. Acad. Sci. Fenn. A, 17: 38. 1924.
Ustilago stellaria Liro, Ann. Acad. Sci. Fenn. A, 17: 39. 1924.

Ustilago silenes-nutantis Liro, Ann. Acad. Sci. Fenn. A, 17: 43. 1924.
Ustilago silenes-inflatae Liro, Ann. Acad. Sci. Fenn. A, 17: 44. 1924.

CONTROL
3211 White 1936

CULTURE ON ARTIFICIAL MEDIA
311 Brefeld 1883
1498 Kniep 1919
3329 Zillig 1921
148 Bauch 1922
1501 Kniep 1926
961 Goldschmidt 1928
235 Blumer 1937
2688 Schopfer 1937 (optimum strength of aneurin)
2690, 2691 Schopfer and Blumer 1938 (growth factors)

CYTOLOGY
579 Dangeard 1892
762 Ferry 1895
1072 Harper 1898
3203 Werth and Ludwigs 1912
2231 Paravicini 1917
3177 Wang 1932

HETEROTHALLISM AND SEX
803 Fischer v. Waldheim 1869 (fusion of sporidia)
311 Brefeld 1883 (fusion of sporidia)
579 Dangeard 1892
762 Ferry 1895
1072 Harper 1898 (fusion of sporidia)
2231 Paravicini 1917 (fusion of sporidia)
1498 Kniep 1919
3329 Zillig 1921
148 Bauch 1922
150 Bauch 1925
1501 Kniep 1926
152 Bauch 1927

HYBRIDIZATION AND GENETICS
3329 Zillig 1921 (sporidial fusion between physiologic races)
1501 Kniep 1926 (sporidial fusions with other species)
961 Goldschmidt 1928 (interracial)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
3056 Tulasne and Tulasne 1847
803 Fischer v. Waldheim 1869
2698 Schröter 1877
2327 Plowright 1881
311 Brefeld 1883
939 Giard 1888
1797, 1798, 1799, 1800 Mangin 1888–1889
940 Giard 1888

942 Giard 1889
1807 Mangin and Giard 1889
3153 Vuillemin 1891
579 Dangeard 1892
1789 MacMillan 1892
1805 Mangin 1892
1806 Mangin 1893
1794 Molliard 1893
762 Ferry 1895
2333 Plowright 1899
842 Franciscis 1901
943 Giard 1902
117 Baar 1903
185 Behrens 1904
322 Brefeld and Falk 1905
1124 Hecke 1907 (vegetative infection)
3198 Werth 1909
3199 Werth 1910
3200 Werth 1911
3201 Werth 1912
3203 Werth and Ludwigs 1912
1689 Lind 1913
1498 Kniep 1919
3329 Zillig 1921
1720 Liro 1924
1128 Hecke 1926
709 Erlenmeyer and Geiger-Heuber 1935
3211 White 1936
235 Blumer 1937
236 Blumer 1941
1887 Maurizio 1941
127 Baker 1947

MISCELLANEOUS

Causing a "new variety" of *Lychnis diurna* "with black eyes" 671 Dod 1889
Symptoms and morphology 3256 Wolley 1889
Pathological histology 117 Baar 1903
Symptoms and morphology 2655 Schellenberg 1911
Infected hosts sometimes described as "new forms" 1689 Lind 1913
Host range and geographic distribution 3328 Zillig 1920
Hosts and morphology 1720 Liro 1924
Infection on leaf axil buds 1128 Hecke 1926
Strain differences and secondary sexual characters 152 Bauch 1927
Severe incidence on carnations in London 3211 White 1936

Optimum concentration of aneurin for culture on synthetic medium 2688 Schopfer 1937
Growth factors 2690, 2691 Schopfer and Blumer 1938
Reported for first time in Quebec 2338 Pomerleau and Brunel 1939
First record on cultivated Dianthus in Norway 1017 Hagen 1948

PHYSIOLOGIC SPECIALIZATION
1498 Kniep 1919
3329 Zillig 1921
1720 Liro 1924 (as *Ustilago lychnidis-dioicae*)
152 Bauch 1927
961 Goldschmidt 1928 (inheritance of specialization)
127 Baker 1947

SPORE GERMINATION AND FACTORS AFFECTING
3056 Tulasne and Tulasne 1847
614 DeBary 1853
803 Fischer v. Waldheim 1869
2698 Schröter 1877
311 Brefeld 1883
2329 Plowright 1889
579 Dangeard 1892
716 Essmon 1893
762 Ferry 1895
1072 Harper 1898
2655 Schellenberg 1911
321 Brefeld 1912
2231 Paravicini 1917
1498 Kniep 1919
3329 Zillig 1921

USTILAGO VUIJCKII Oudemans and Beijerinck. Oud. Versl. Akad. Amsterdam IV, 3: 55. 1895.

Cintractia vuijckii Cif., Ann. Mycol. 29: 72. 1931.

CYTOLOGY
1720 Liro 1924
2732 Seyfert 1927

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING
2195 Oudemans 1895
389 Bucholtz and Ekmann 1920
1720 Liro 1924
2732 Seyfert 1927

MISCELLANEOUS
Hosts and morphology 1720 Liro 1924
Phylogenetic affinities to Peronosporaceae 1720 Liro 1924

PHYSIOLOGIC SPECIALIZATION
1720 Liro 1924

SPORE GERMINATION AND FACTORS AFFECTING
315 Brefeld 1895
2199 Oudemans 1895
1720 Liro 1924
2732 Seyfert 1927

USTILAGO WILLIAMSII (Griff.) Lavrov. Trav. Inst. Sci. Biol. Univ. Tomsk 2: 22. 1936.

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Sorosporium williamsii Griff., Bull. Torr. Bot. Club 29: 290–301. 1902.
Ustilago appendiculata Speg., Ann. Mus. Nac. Buenos Aires III. 12: 288. 1909.

CYTOLOGY
1211 Hirschhorn 1945

MISCELLANEOUS
Morphology (as *Ustilago appendiculata*) 1191 Hirschhorn 1939
Comparison with other stem smuts of *Stipa* and *Oryzopsis*; pathological histology; geographic distribution 790 Fischer 1945
Position in "*Ustilago hypodytes*" complex; comparison with other *Ustilago* spp. causing stem smut; geographic distribution 795 Fischer and Hirschhorn 1945
Morphology and symptoms 796 Fischer and Hirschhorn 1945

SPORE GERMINATION
1635 Lavrov 1936
1191 Hirschhorn 1939 (as *Ustilago appendiculata*)
1517 Kolk 1943 (as *Ustilago hypodytes*)
795 Fischer and Hirschhorn 1945
796 Fischer and Hirschhorn 1945

USTILAGINALES GENERAL

CONTROL
263 Bolley 1897 (introduction of formaldehyde as fungicide for smut control in cereals)
2796–2798 Staes 1898 (warning against use of mill dusts and castings as fertilizer)
3047, 3048 Tubeuf 1901 (cereal smuts)
3049–3051 Tubeuf 1902 (cereal smuts)
1763 McAlpine 1910
3320 Wilcox 1912 (cereal smuts)
3101 Vaughan and Johnson 1916 (grain smuts in general)
1925 Merchan 1919 (use of electric current through salt solution)
1926 Mercier 1919 (by electrification)
1785 Mackie and Briggs 1920
1115 Heald and Zundel 1921 (cereal smuts)
163 Baudys 1922 (wheat and barley smuts)
1784 Mackie 1925 (seed treated with fungicidal dusts avoided by insects and mice)

1788 Mackie and Briggs 1926 (effect of copper carbonate-treated wheat upon mice)
3003, 3004 Tisdale 1926 (cereal smuts)
953 Gitmann 1927 (formalin vapor and cereal smuts)
2346 Potapov 1927 (Siberian smuts)
2749 Siegwardt 1927 (wheat treated with tillantin dust and subsequently washed and dried is safe for consumption by pigs and fowl)
3019 Tisdale and Tapke 1927 (wheat and rye)
1282 Howitt and Stone 1929 (grain smuts)
2678 Schmidt 1932 (detection of mercury in treated cereal seed)
1059 Hanna and Popp 1935 (cereal smuts)
3150 Vong-May and Chan-Tsi 1935 (cereal smuts)
1309 Hurst *et al.* 1936 (various types of equipment and machines for use with fungicidal dusts)
1601 Kvashnina and Etmisheva 1936 (use of sulphides)
1984 Moore 1938 (seed treating apparatus)
1672, 1673 Leukel and Nelson 1939, 1940 (use of chlorine gas)
339 Brett and Dillon Weston 1941 (loss of vitality of grain during post-treatment storage)
1515 Koehler 1941 (effect of post-treatment storage on control, only half as much new improved ceresan needed when grain is to be stored; relation of moisture)
25 American Phytopathological Society Committee 1944 (evaluation of new fungicides by greenhouse testing procedure)
1015 Hafiz 1948 (control of cereal smuts through cultural practices)

CULTURE ON ARTIFICIAL MEDIA

313 Brefeld 1888
315 Brefeld 1895
320 Brefeld 1908

CYTOLOGY

579 Dangeard 1892
1072 Harper 1898
2231 Paravicini 1917
2416 Rawitscher 1922
1459 Kharbush 1927
3179 Wang 1934
2608 Sampson 1939
454 Christensen and Rodenhiser 1940 (literature survey)

HETEROTHALLISM AND SEX

2230 Paravicini 1916
2231 Paravicini 1917
1501 Kniep 1926
1459 Kharbush 1927
1502 Kniep 1928

153, 154 Bauch 1930 (multipolar sexuality—as exemplified by *Ustilago longissima*)

HYBRIDIZATION AND GENETICS

1501 Kniep 1926 (incomplete hybridization between *Ustilago* spp.; sporidia of reticulate-spored species do not fuse with those of smooth or echinulate-spored species)
158 Bauch 1932 (genetic bases for hybridization and sterility)
159 Bauch 1934 (crosses—sporidial fusions—between bipolar and multipolar species)
454 Christensen and Rodenhiser 1940 (literature survey)

LIFE HISTORY, PARASITISM AND FACTORS AFFECTING

803 Fischer v. Waldheim 1869
619 DeBary 1884
313 Brefeld 1888 (especially of the cereal smuts)
2329 Plowright 1889
2159 Norton 1896 (Kansas smuts)
3047 Tubeuf 1901 (cereal smut spores retain viability after passage through animal intestine)
1124 Hecke 1907 (shoot or vegetative infection in smut fungi)
1763 McAlpine 1910
321 Brefeld 1912
1360 Jensen 1918 (review of Brefeld's work on blossom infection)
2346 Potapov 1927 (Smuts of Siberia)
2608 Sampson 1939 (general review of life cycles)
2062 Mundkur 1945 (modes of transmission of Indian cereal smuts)
2941 Tapke 1948 (influence of environment on cereal smuts)

MISCELLANEOUS

Historical account of the earlier years 614 DeBary 1853
Historical account of the earlier years 3056 Tulasne and Tulasne 1847
Structure of spores 802 Fischer v. Waldheim 1867
Historical account of the earlier years 803 Fischer v. Waldheim 1869
Spore longevity 1678 von Liebenberg 1879
Morphological analysis of the genera 311 Brefeld 1883
Possible relationship of the yeasts to the sporidial generations of smut fungi 311 Brefeld 1883
Affinities to other groups 619 DeBary 1884
Infection experiments and methods 313 Brefeld 1888
Penetration of infection tubes into unnatural hosts 313 Brefeld 1888
Three species of beetles (*Phalacrus politus* Say, *P. penicilliatus* Say, and *Brachytarsus variegatus* Say) which feed on smut in the field 1447 Kellerman and Swingle 1890
Phylogeny and taxonomic position 1968 Moeller 1895

Spore germination 2159 Norton 1896
Some cereal smut spores germinate after 8½ years in herbarium 2717 Selby 1898
Acute dermatitis caused by a smut 2620 Sarra 1898
Classification and taxonomy 2245 Patoulliard 1900
All of the more important diseases of forage plants observed were caused by various species of smuts 993 Griffiths 1903
Use of centrifuge (this is first record of) to determine extent of spore contamination of grain 493 Cobb 1904
Toxicity to animals 1725 Liskun 1908
Historical account 1763 McAlpine 1910
Phylogeny and relationships 1763 McAlpine 1910
Grain smut losses in United States 2895 Swingle 1917
Relation between purity of strain of host and freedom from cereal smuts 1227 Hohngaard 1921
Systematic relations to other fungi 1355 Janchen 1923
Smut spores in air at high altitudes 2813 Stakman *et al.* 1923
Conidial stage of *Entyloma* indistinguishable from *Ramularia* unless chlamydospores present 1853 Marchal and Sternon 1924
Seed treated with dusts for smut control avoided by insects and mice 1784 Mackie 1925
Method for isolating single spores or sporidia 632 Dickinson 1926
New tendencies in the study of smut fungi 823 Fleroff 1926
No injurious effects on mice when forced to eat wheat treated with copper carbonate 1788 Mackie and Briggs 1926
Seed treated with dusts for smut control avoided by insects and mice 1788 Mackie and Briggs 1926
Clamp connections on the mycelium of various smut fungi 2732 Seyfert 1927
Wheat treated with copper-arsenic compounds not injurious to chickens 2749 Siegwardt 1927
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1193 Hirschhorn 1940 (*Cintractia* spp. in Argentina)
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