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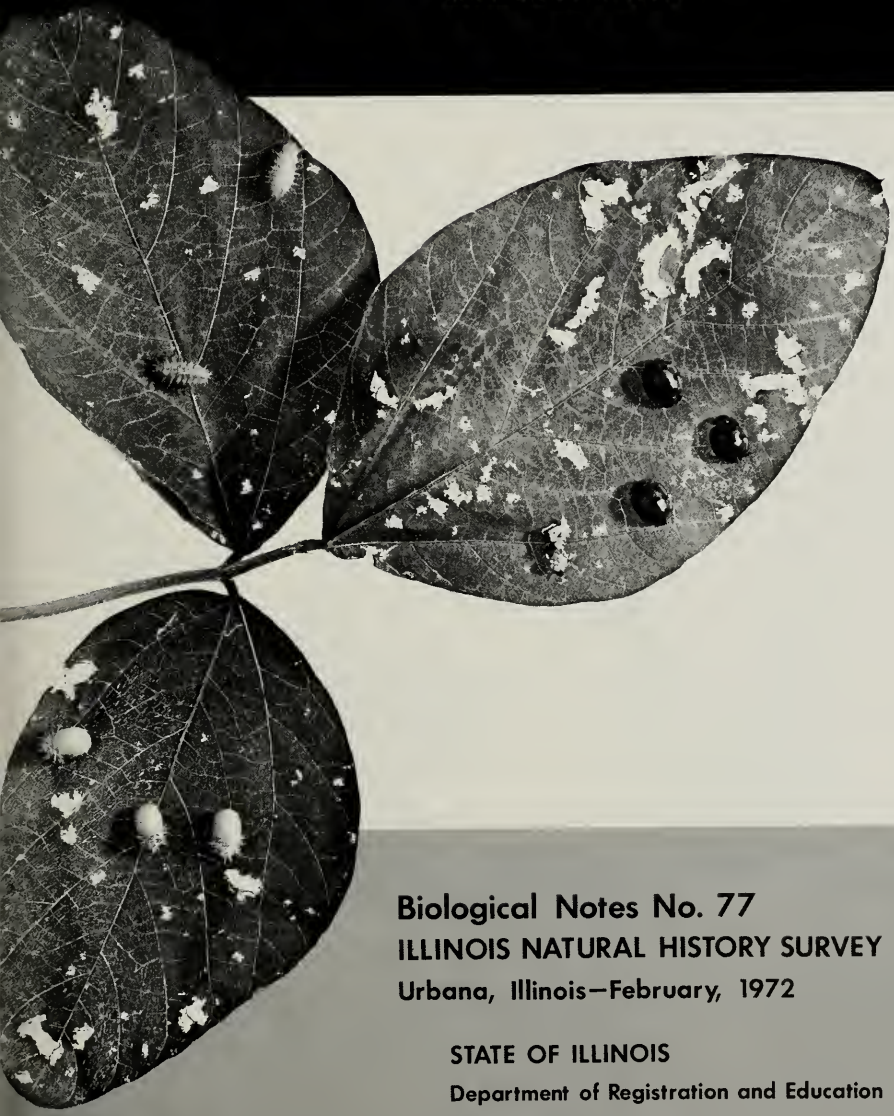
The Literature of Arthropods Associated with Soybeans

I. A BIBLIOGRAPHY OF THE MEXICAN BEAN BEETLE *Epilachna varivestis* Mulsant (Coleoptera: Coccinellidae)

M.P. NICHOLS • M. KOGAN



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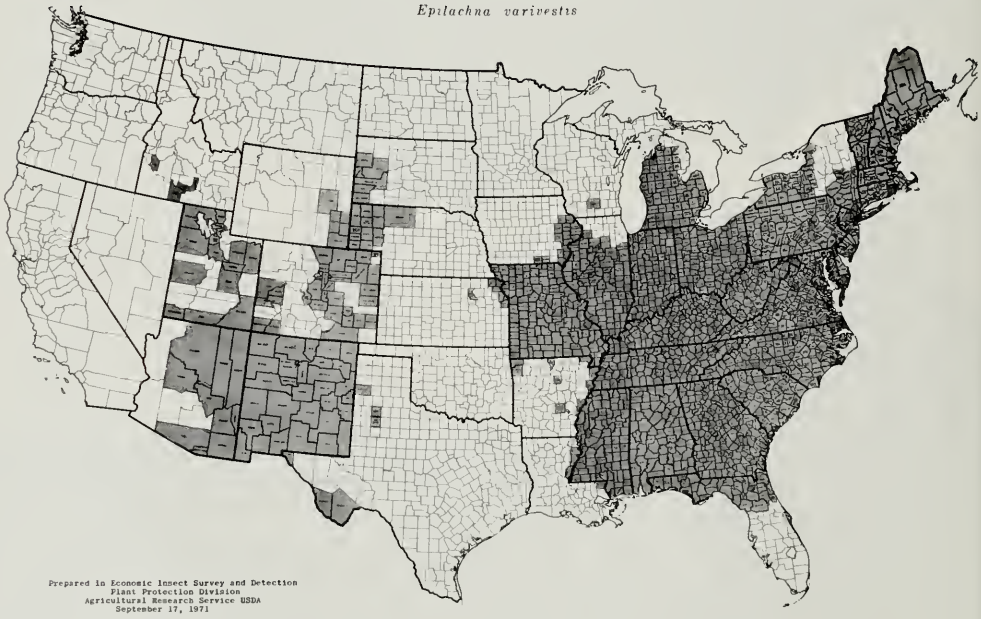
Distribution of Mexican Bean Beetle

Epilachna varivestis



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The Literature of Arthropods Associated with Soybeans

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M. P. Nichols and M. Kogan

THE ORGANIZATION OF A CENTER to search out, store, and retrieve the literature on insects associated with soybeans is part of a broad program of research and information on soybean entomology at the Illinois Natural History Survey and the University of Illinois (Kogan & Luckmann 1971)[1].

In establishing this center the main objective was to assemble, for easy and rapid access, the vast mass of data on soybean insects that is scattered throughout the entomological literature. Furthermore, it was decided to develop this center as a service-oriented unit to support the Illinois Soybean Entomology Team and its cooperative research and extension personnel. Three parallel activities are under way: (1) Establish and maintain a collection of scientific reports and extension publications, computerized for rapid retrieval; (2) make bibliographic surveys and provide specialized bibliographies to workers in soybean entomology; and (3) compile and publish bibliographies on species or subjects of key importance to soybean entomology.

A bibliography of the Mexican bean beetle—*Epilachna varivestis* Mulsant (Coleoptera: Coccinellidae)—was originally compiled to provide information on nutrition and host selection of soybean insects in support of ongoing research at the Natural History Survey and the University of Illinois. The interest in, and economic importance of, this species in many soybean-producing areas of the United States prompted us to expand the original scope of this literature file and present this as the first of a series of bibliographies of insects associated with soybeans.

The Mexican bean beetle is considered in many soybean-producing areas of the United States as one of the most serious pests of the crop. Research on chemical control of the beetle and breeding for plant resistance is being conducted in several institutions. The species is also a convenient laboratory animal for basic research. Its oligophagous relationship to certain genera of Leguminosae has prompted its use in studies of host plant selection. It has become a standard test animal in pesticide toxicology since its metabolism of DDT was studied and reported in a classical work in toxicology (Sternburg & Kearns 1952)[2].

This bibliography is not limited to papers dealing with the Mexican bean beetle on soybeans. Many of the listed references do not even mention soybeans. It is intended, however, that the bibliographies in this series be as complete as possible; consequently, they will be of interest beyond the scope of soybean entomology.

The nearly 800 titles in the present list were obtained primarily from standard reference sources and cross references. In addition, a questionnaire was sent to 120 institutions in the United States requesting information on past and current use of the Mexican bean beetle in local research programs. Other references were secured through replies to this questionnaire.

There was little deliberate screening of references for this bibliography in contrast to other entomological bibliographies that have appeared in recent years. Books on general and applied entomology were deleted, as were certain outdated articles of a popular nature on plant damage and insecticidal control. Many short notes and extension type publications, however, were included as they may have some value in tracing the dispersal of the Mexican bean beetle and the evolution of its economic role.

References to the species in brief paragraphs which are parts of annual reports (mostly by agricultural experiment stations) are included as an appendix to the literature and were not tabulated or numbered. The year that appears in this list is that covered by the report and not necessarily the year of publication. It was not intended that this appendix of annual reports be complete, but that it serve primarily as a guide.

In addition, interested researchers are urged to consult the USDA *Cooperative Economic Insect Report,* the USDA *Insect Pest Survey Bulletin,* and the *Canadian Insect Pest Review* for further information concerning the Mexican bean bettle.

The references are numbered and tabulated (see table following the appendix) by subject and periods of publication. Each reference appears only once in the tabulation, under the subject to which it seemed to the authors to make the most significant contribution. However, in the case of those articles which deal with soybeans, the references are listed under the heading SOYBEANS, as well as under one other subject heading. Those interested in more complex areas are advised to peruse also related subjects (e.g. biology and life history, ecology, and distribution). The paucity of references in certain areas led us to combine subjects such as morphology and taxonomy, and physiology and anatomy. The tabulation is offered, therefore, as a simplified subject index to serve as a preliminary key to the literature.

[1] Kogan, M., and W. H. Luckmann. 1971. A comprehensive program of research and information on soybean insects. Bull. Entomol. Soc. Amer. 17:92-93.

[2] Sternburg, J., and C. W. Kearns. 1952. Metabolic fate of DDT when applied to certain naturally tolerant insects. J. Econ. Entomol. 45:497-505.

This paper is published by authority of the State of Illinois, IRS Ch. 127, Par. 58.21. M. P. Nichols is a Research Assistant in Agricultural Entomology at the University of Illinois College of Agriculture and the Illinois Natural History Survey. Dr. M. Kogan is an Associate Entomologist at the Survey and Assistant Professor at the College of Agriculture.

Abbreviations used in the reference entries appear in full in a listing at the end of the paper.

This bibliography is part of Illinois' contribution to the regional USDA project S-74, "Biology and Control of Arthropods on Soybeans."

Mrs. Nancy DeWitt did portions of the search, Mr. Ray Kotek worked in the organization of the files and provided general technical assistance, and O. F. Glissendorf edited the manuscript. Their collaboration is gratefully acknowledged.

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TABLE OF REFERENCES BY SUBJECT AND PERIOD OF PUBLICATION

SUBJECT \ YEAR	1900 & Prior	1910's	1920's	1930's	1940's	1950's	1960's	1970's	SOYB
TAXONOMY & MORPHOLOGY	27,38,83, 121,122,132, 195,203,246, 352,413	46,101,313	42,356,512	86,341,345, 505,549,582		37	454		
BIOLOGY & LIFE HISTORY	91,190,199, 200,473,474, 578	92,165,399, 411	31,85,95,115, 117,153,156, 160,162,193, 214,216,239, 253,254,261, 264,285,312, 315,360,400, 403,455,456, 457,516	48,146,150, 151,161,235, 269,282,283, 290,338,363, 417,444,462, 463,478,482, 506,521	23,123,194, 278,284,437, 445,446,451, 464,481	166,323,401, 540,541,542	143,543,544		
ECOLOGY			144,207,208, 266,504,520	145,149,170, 259,271,272, 393,405,426, 469,507,508	372	24,333,334, 555	330		
DISTRIBUTION	100,168,332, 472,575,576	102,248	1,2,3,4,5, 28,30,74,84, 93,94,112, 126,127,134, 169,215,223, 224,225,226, 249,251,255, 267,268,307, 342,359,361, 362,370,386, 402,404,409, 423,427,440, 448,479,480, 509,513,537, 538	6,67,87,128, 154,158,179, 221,270,273, 294,316,339, 346,686	10,39,130, 174,204,277, 350,351,514, 517,558,559, 572	104,131			2
PHYSIOLOGY & INTERNAL ANATOMY			460	75,227,343, 382	138,276	76,80,579	205,245	542	
TOXICOLOGY			389,390	183,184,213, 286,289,292, 349,395,429, 432,491,518, 556,557,580	20,40,173, 185,186,196, 217,218,219, 222,228,232, 233,240,302, 306,314,324, 325,328,353, 377,378,379, 380,396,412, 428,439,452, 468,476,483, 496,501,502, 503,525,526, 527,528,530, 539,566,567, 568	18,65,90, 139,202,229, 241,242,244, 301,326,327, 329,471,498, 499,510,531	152,197,230, 321,488,519, 560,562	422,489	
HOST SELECTION & FEEDING BEHAVIOR					163,322	175,176,177, 358	25,26,77,78, 98,178,331, 348,415	340	181,3-8 572
ECONOMIC ROLE & DAMAGE	201, 247,500,577		32,88,252, 260,263,265, 369,371,385, 441	33,116,118, 120,180,305, 381,522,523	22,159,231, 237,300,354, 383,408,490, 495,515,546, 547	227,438,447	421,458,470	309,368	368,38 420,42 470
BIOLOGICAL CONTROL			14,493	15,97,188, 287,459,497	344		19		
CULTURAL CONTROL				68,69,89, 533	107				
CHEMICAL CONTROL		109,110,431, 511	105,113,114, 157,256,262, 367,384,387, 388,392,484, 485	7,8,13,29, 35,41,45,49, 50,51,52,53, 54,55,62,79, 103,106,111, 119,124,125, 141,147,148, 155,181,182, 187,191,192, 198,212,243, 257,258,274, 275,279,280, 281,288,291, 293,295,299, 303,304,308, 310,347,357, 374,391,394, 424,425,443, 449,487,524, 532,534,535, 550,552,553, 581	9,11,12,34, 36,43,44,47, 56,57,58,59, 60,61,70,71, 72,96,99, 129,133,136, 167,171,172, 209,210,220, 234,236,238, 296,297,355, 364,365,366, 397,398,406, 414,416,430, 442,450,453, 461,465,466, 475,486,492, 494,529,548, 554,563,565, 573,574,583, 585,589	17,21,63, 64,66,73, 108,135,137, 142,164,189, 206,250,298, 311,335,336, 337,373,375, 376,407,410, 418,433,434, 435,467,564, 570,587,588, 590,591	16,82,140, 317,318,319, 419,420,477, 536,569,571	320,551,561	317,31 435,4
PLANT RESISTANCE						436	81,211, 584,586	545	545

PERIODICAL ABBREVIATIONS

Acadian Natur. Acadian Naturalist.
Agr. Chem. Agricultural Chemicals.
Agr. Leaders Dig. Agricultural Leader's Digest.
Ala. Agr. Exp. Sta. Bull. Alabama Agricultural Experiment Station Bulletin.
Ala. Agr. Exp. Sta. Ext. Serv. Circ. Alabama Agricultural Experiment Station Extension Service Circular.
Ala. Agr. Exp. Sta. Leafl. Alabama Agricultural Experiment Station Leaflet.
Amer. Agr. American Agriculturalist.
Amer. Natur. American Naturalist.
Ann. Soc. Agr. Lyon. Annales de la Société nationale d'agriculture d'histoire naturelle et des arts utiles de Lyon.
Ann. Soc. Entomol. Que. Annales de la Société Entomologique du Quebec.
Ann. Entomol. Soc. Amer. Annals of the Entomological Society of America.
Annu. Meet. Entomol. Soc. Japan, Sapporo. Annual Meeting of the Entomological Society of Japan, Sapporo.
Annu. Rev. Entomol. Annual Review of Entomology.
Ariz. Agr. Exp. Sta. Bull. Arizona Agricultural Experiment Station Bulletin.
Ariz. Agr. Ext. Serv. Circ. Arizona Agricultural Extension Service Circular.
Bull. Brooklyn Entomol. Soc. Bulletin of the Brooklyn Entomological Society.
Bull. Entomol. Res. Bulletin of Entomogical Research.
Bull. Entomol. Soc. Amer. Bulletin of the Entomological Society of America.
Bull. Natur. Hist. Lab. Univ. Iowa. Bulletin of the Natural History Laboratory, University of Iowa.
Bull. N. C. Dep. Agr. Bulletin of the North Carolina Department of Agriculture.
Bull. S. Calif. Acad. Sci. Bulletin of the Southern California Academy of Science.
Bull. Va. State Crop Pest Comm. Bulletin of the Virginia State Crop Pest Commission.
Calif. Dep. Agr. Bull. California Department of Agriculture Bulletin.
Calif. Dep. Agr. Mon. Bull. California Department of Agriculture Monthly Bulletin.
Can. Entomol. Canadian Entomologist.
Carnegie Inst. Wash. Publ. Carnegie Institute, Washington, Publication.
Colo. Agr. Exp. Sta. Bull. Colorado Agricultural Experiment Station Bulletin.
Colo. Agr. Ext. Circ. Colorado Agricultural Extension Circular.
Colo. Farmers Bull. Colorado Farmer's Bulletin.
Conn. Agr. Exp. Sta. Bull. Connecticut Agricultural Experiment Station Bulletin.
Conn. Agr. Exp. Sta. Circ. Connecticut Agricultural Experiment Station Circular.
Conn. Agr. Exp. Sta. Ext. Serv. Bull. Connecticut Agricultural Experiment Station Extension Service Bulletin.
Conn. Agr. Exp. Sta. Serv. Bull. Connecticut Agricultural Experiment Station Service Bulletin.
Conn. State Entomol. Bull. Connecticut State Entomologist's Bulletin.
Contrib. Boyce Thompson Inst. Contributions from the Boyce Thompson Institute.
Country Gent. Country Gentleman.
Crop Sci. Crop Science.
Del. Agr. Exp. Sta. Bull. Delaware Agricultural Experiment Station Bulletin.
Del. Coll. Agr. Ext. Div. Bull. Delaware College of Agriculture Extension Division Bulletin.
Del. Univ. Agr. Exp. Sta. Ext. Serv. Circ. Delaware University Agricultural Experiment Station Extension Service Circular.
Econ. Geogr. Economic Geography.
Entomol. Exp. Appl. Entomologia Experimentalis et Applicata.
Entomol. News. Entomological News.
Entomol. Rec. J. Var. Entomological Record and Journal of Variations.
Fla. Agr. Exp. Sta. Bull. Florida Agricultural Experiment Station Bulletin.
Fla. Entomol. Florida Entomologist.
Fla. State Plant Bd. Quart. Bull. Florida State Plant Board Quarterly Bulletin.
Foll. Misc. Sec. Agr. Mex. Folleto Miscellaneo, Secretaria de Agricultura, Mexico.
Gard. Chron. Amer. Gardener's Chronicle of America.
Ga. Exp. Sta. Bull. Georgia Agricultural Experiment Station Bulletin.
Ga. State Bd. Entomol. Bull. Georgia State Board of Entomology Bulletin.
Ga. Univ. Coop. Ext. Serv. Leafl. Georgia University Cooperative Extension Service Leaflet.
Grain Dealers J. Grain Dealers Journal.
Great Basin Natur. Great Basin Naturalist.
Idaho Agr. Ext. Serv. Bull. Idaho Agricultural Extension Service Bulletin.
Ill. Agr. Exp. Sta. Circ. Illinois Agricultural Experiment Station Circular.
Indiana Agr. Exp. Sta. Circ. Indiana Agricultural Experiment Station Circular.
Int. Congr. Biochem. Symp. International Congress of Biochemistry, Symposium.
Int. Congr. Entomol., Vienna Symp. International Congress of Entomology, Vienna, Symposium.
J. Agr. Food Chem. Journal of Agricultural and Food Chemistry.
J. Agr. Res. Journal of Agricultural Research.
J. Econ. Entomol. Journal of Economic Entomology.
J. Insect Physiol. Journal of Insect Physiology.
J. N. Y. Entomol. Soc. Journal of the New York Entomological Society.
J. Wash. Acad. Sci. Journal of the Washington Academy of Science.
Ky. Agr. Exp. Sta. Circ. Kentucky Agricultural Experiment Station Circular.
Ky. Agr. Exp. Sta. Ext. Circ. Kentucky Agricultural Experiment Station Extension Circular.
La. Agr. Exp. Sta. Bull. Louisiana Agricultural Experiment Station Bulletin.
Maine Agr. Coll. Ext. Serv. Bull. Maine Agricultural College Extension Service Bulletin.
Maine Agr. Exp. Sta. Bull. Maine Agricultural Experiment Station Bulletin.
Maine Agr. Exp. Sta. Misc. Publ. Maine Agricultural Experiment Station Miscellaneous Publication.
Market Growers J. Market Growers Journal.
Md. Agr. Ext. Serv. Circ. Maryland Agricultural Experiment Station Extension Service Circular.
Mass. Agr. Exp. Sta. Bull. Massachusetts Agricultural Experiment Station Bulletin.
Mass. Agr. Exp. Sta. Ext. Serv. Leafl. Massachusetts Agricultural Experiment Station Extension Service Leaflet.
Mass. Agr. Exp. Sta. Ext. Serv. Spec. Circ. Massachusetts Agricultural Experiment Station Extension Service Special Circular.
Mexico, Sec. Fomento, Com. Parasitol. Agr. Circ. Mexico, Secretaria de Fomento Comision de Parasitologia Agricola Circular.
Mich. Agr. Exp. Sta. Circ. Bull. Michigan Agricultural Experiment Station Circular Bulletin.
Mich. Agr. Exp. Sta. Quart. Bull. Michigan Agricultural Experiment Station Quarterly Bulletin.
Mich. Agr. Exp. Sta. Spec. Bull. Michigan Agricultural Experiment Station Special Bulletin.
Mich. State Coll. Agr. Exp. Sta. Ext. Bull. Michigan State College Agricultural Experiment Station Extension Bulletin.
Mich. State Univ. Agr. Exp. Sta. Coop. Ext. Serv. Bull. Michigan State University Agricultural Experiment Station Cooperative Extension Service Bulletin.
Miss. Agr. Coll. Ext. Dep. Bull. Mississippi Agricultural College Extension Department Bulletin.
Miss. Agr. Coll. Ext. Dep. Circ. Mississippi Agricultural College Extension Department Circular.
Miss. Agr. Exp. Sta. Bull. Mississippi Agricultural Experiment Station Bulletin.
Miss. Farm Res. Mississippi Farm Research.
Miss. State Plant Bd. Quart. Bull. Mississippi State Plant Board Quarterly Bulletin.
Mo. Agr. Exp. Sta. Circ. Missouri Agricultural Experiment Station Circular.
Mo. Agr. Ext. Folder. Missouri Agricultural Extension Folder.
Mo. Farmer. Missouri Farmer.
Mo. Univ. Agr. Ext. Serv. Circ. Missouri University Agricultural Extension Service Circular.
Nat. Geogr. Mag. National Geographic Magazine.
Natur. Hist. Natural History.
N. Engl. Homestead. New England Homestead.

N. H. Agr. Exp. Sta. Tech. Bull. New Hampshire Agricultural Experiment Station Technical Bulletin.
N. J. Agr. New Jersey Agriculture.
N. J. Agr. Exp. Sta. Circ. New Jersey Agricultural Experiment Station Circular.
N. J. Agr. Exp. Sta. Ext. Div. Bull. New Jersey Agricultural Experiment Station Extension Division Bulletin.
N. Mex. Agr. Exp. Sta. Bull. New Mexico Agricultural Experiment Station Bulletin.
N. Mex. Agr. Exp. Sta. Ext. Serv. Circ. New Mexico Agricultural Experiment Station Extension Service Circular.
N. Y. Cornell Agr. Exp. Sta. Ext. Bull. New York, Cornell, Agricultural Experiment Station Extension Bulletin.
N. Y. Cornell Agr. Exp. Sta. Mem. New York, Cornell, Agricultural Experiment Station Memoir.
N. Y. Geneva Agr. Exp. Sta. Bull. New York, Geneva, Agricultural Experiment Station Bulletin.
N. Y. Geneva Agr. Exp. Sta. Circ. New York, Geneva, Agricultural Experiment Station Circular.
N. Y. State Agr. Exp. Sta. Farm Res. New York State Agricultural Experiment Station Farm Research.
N. C. Agr. Exp. Sta. Ext. Serv. Circ. North Carolina Agricultural Experiment Station Extension Service Circular.
N. C. Agr. Exp. Sta. Res. Farming. North Carolina Agricultural Experiment Station Research and Farming.
N. C. Agr. Ext. Serv. Folder. North Carolina Agricultural Extension Service Folder.
Ohio Agr. Exp. Sta. Ext. Serv. Bull. Ohio Agricultural Experiment Station Extension Service Bulletin.
Ohio Agr. Exp. Sta. Mon. Bull. Ohio Agricultural Experiment Station Monthly Bulletin.
Ohio Biol. Surv. Bull. Ohio Biological Survey Bulletin.
Ohio J. Sci. Ohio Journal of Science.
Ohio State Univ. Agr. Coll. Ext. Serv. Bull. Ohio State University Agricultural College Extension Service Bulletin.
Pan-Pac. Entomol. Pan-Pacific Entomologist.
Pa. Agr. Exp. Sta. Circ. Pennsylvania Agricultural Experiment Station Circular.
Pa. Agr. Exp. Sta. Ext. Serv. Circ. Pennsylvania Agricultural Experiment Station Extension Service Circular.
Pa. Dep. Agr. Gen. Bull. Pennsylvania Department of Agriculture General Bulletin.
Pa. Dep. Agr. Harrisburg Bull. Pennsylvania Department of Agriculture, Harrisburg, Bulletin.
Proc. Annu. Meet. Conn. Veg. Growers Assoc. Proceedings of the Annual Meeting of the Connecticut Vegetable Growers Association.
Proc. Annu. Meet. Ohio Veg. Growers Assoc. Proceedings of the Annual Meeting of the Ohio Vegetable Growers Association.
Proc. Entomol. Soc. Phila. Proceedings of the Entomological Society of Philadelphia.
Proc. Entomol. Soc. Wash. Proceedings of the Entomological Society of Washington.
Proc. Hawaiian Entomol. Soc. Proceedings of the Hawaiian Entomological Society.
Proc. Indiana Acad. Sci. Proceedings of the Indiana Academy of Science.
Proc. N. Cent. Br. Entomol. Soc. Amer. Proceedings of the North Central Branch of the Entomological Society of America.
Proc. U. S. Nat. Mus. Proceedings of the United States National Museum.
Progr. Farmer. Progressive Farmer.
Purdue Agr. Ext. Dep. Bull. Purdue Agricultural Extension Department Bulletin.
Quart. Bull. State Plant Bd. Miss. Quarterly Bulletin of the State Plant Board of Mississippi.
Rep. Iowa State Hort. Soc. Report of the Iowa State Horticultural Society.
Res. & Farm. Research and Farming.
Roy. Entomol. Soc. London Proc., Ser. C. Proceedings of the Royal Entomological Society of London, Series C.
Rural N. Y. Rural New Yorker.
S. C. Agr. Exp. Sta. Bull. South Carolina Agricultural Experiment Station Bulletin.
S. C. Agr. Exp. Sta. Circ. South Carolina Agricultural Experiment Station Circular.
S. C. Agr. Exp. Sta. Ext. Serv. Bull. South Carolina Agricultural Experiment Station Extension Service Bulletin.
S. C. Agr. Exp. Sta. Ext. Serv. Circ. South Carolina Agricultural Experiment Station Extension Service Circular.
S. Agr. Southern Agriculturalist.
Smithson. Inst. Annu. Rep. Smithsonian Institute Annual Report.
Smithson. Inst. Misc. Coll. Smithsonian Institute Miscellaneous Collection.
S. Planter. Southern Planter.
Soybean Dig. Soybean Digest.
Suppl. Mon. Bull. Calif. State Comm. Hort. Supplement to the Monthly Bulletin of the California State Commission of Horticulture.
Tenn. Agr. Coll. Ext. Serv. Div. Publ. Tennessee Agricultural College Extension Service Division Publication.
Tenn. Agr. Exp. Sta. Bull. Tennessee Agricultural Experiment Station Bulletin.
Tenn. Agr. Exp. Sta. Circ. Tennessee Agricultural Experiment Station Circular.
Tenn. Agr. Ext. Circ. Tennessee Agricultural Extension Circular.
Tenn. State Bd. Entomol. Bull. Tennessee State Board of Entomology Bulletin.
Tenn. Univ. Agr. Ext. Serv. Leafl. Tennessee University Agricultural Extension Service Leaflet.
Trans. Amer. Entomol. Soc. Transactions of the American Entomological Society.
Trans. Peninsula Hort. Soc. Transactions of the Peninsula Horticultural Society, Delaware.
U.S. Dep. Agr., Agr. Res. Adm. Bur. Entomol. Plant Quarantine E. United States Department of Agriculture, Agricultural Research Administration Bureau of Entomology and Plant Quarantine E Series.
U.S. Dep. Agr. Bull. United States Department of Agriculture Bulletin.
U.S. Dep. Agr. Bur. Entomol. Mon. Let. United States Department of Agriculture, Bureau of Entomology, Monthly Letter.
U.S. Dep. Agr. Bur. Entomol. Plant Quarantine News Let. United States Department of Agriculture, Bureau of Entomology and Plant Quarantine, News Letter.
U.S. Dep. Agr. Circ. United States Department of Agriculture Circular.
U.S. Dep. Agr. Div. Entomol. Bull. United States Department of Agriculture, Division of Entomology, Bulletin.
U.S. Dep. Agr. Farmers Bull. United States Department of Agriculture Farmers' Bulletin.
U.S. Dep. Agr. Leafl. United States Department of Agriculture Leaflet.
U.S. Dep. Agr. Misc. Publ. United States Department of Agriculture Miscellaneous Publication.
U.S. Dep. Agr. Tech. Bull. United States Department of Agriculture Technical Bulletin.
U.S. Dep. Agr. Yearb. Agr. United States Department of Agriculture Yearbook of Agriculture.
U.S. Nat. Mus. Bull. United States National Museum Bulletin.
Utah Agr. Ext. Bull. Utah Agricultural Extension Bulletin.
Utah Agr. Ext. Circ. Utah Agricultural Extension Circular.
Vt. Agr. Ext. Serv. Circ. Vermont Agricultural Experiment Station Extension Service Circular.
Va. Agr. Exp. Sta. Bull. Virginia Agricultural Experiment Station Bulletin.
Va. Agr. Ext. Serv. Publ. (Blacksburg). Virginia Agricultural Extension Service Publication (Blacksburg).
Va. Polytechnic Inst. Ext. Div. News. Virginia Polytechnic Institute Extension Division News.
Va. Truck Exp. Sta. Bull. Virginia Truck Experiment Station Bulletin.
Weekly News Letter. Weekly News Letter, United States Department of Agriculture.
West. Farm Life. Western Farm Life.
W. Va. Agr. Exp. Sta. Bull. West Virginia Agricultural Experiment Station Bulletin.
W. Va. Agr. Ext. Circ. West Virginia Agricultural Extension Circular.
W. Va. Dep. Agr. Circ. West Virginia Department of Agriculture Circular.
World Rev. Pest Control. World Review of Pest Control.
Wyo. Agr. Exp. Sta. Bull. Wyoming Agricultural Experiment Station Bulletin.

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