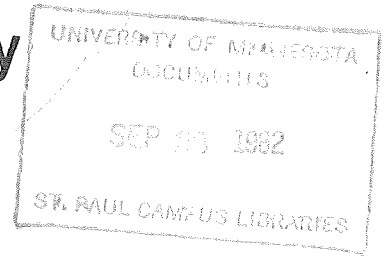


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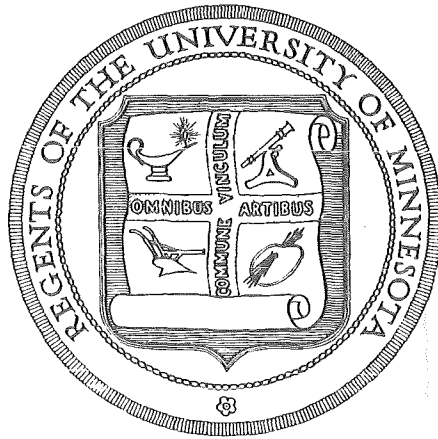
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Publications and Faculty
of the Department of



SOIL SCIENCE

1888 to 1970



University of Minnesota

Soil Series 90

1973

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INTRODUCTION

Historical Notes

The Morrill Act of 1862 enabled the Board of Regents of the University of Minnesota to acquire land and to hire D. P. Strange as Professor of Agriculture in 1872. He was succeeded by Charles Y. Lacy in 1874 and in turn by E. D. Porter in 1881. Following the passage of the Hatch Act in 1887 six staff members were elected and began serving in 1888. The first to arrive was Porter's assistant, Professor Willet M. Hays, B.S. in Agriculture, Iowa Agricultural College.

Willet M. Hays can be claimed as the father of several presently existing University of Minnesota departments. Some of his publications cited in the accompanying Bibliography show that Soil Science at Minnesota also began with his work. Professor Hays eventually became Assistant Secretary of Agriculture, U. S. Department of Agriculture from 1905 to 1913.

Other roots of the Department of Soil Science go to the Department of Agricultural Chemistry organized in 1888. Professor Harry Snyder coming from Cornell University became its Chief in 1891. The name of the Department changed to the Division of Chemistry and Soils in 1907. The many papers of Professor Snyder in the Bibliography attest to his interest in Soils.

Separate Divisions of Soils and Agricultural Biochemistry were formed from the Division of Chemistry and Soils in 1913. Frederick J. Alway who had begun a promising career at the University of Nebraska became Chief of the Division of Soils. He brought with him an assistant, Clayton O. Rost, who earned the first Ph.D. in the Division in 1918. Professor Rost headed the Division from Alway's retirement in 1942 until his own retirement in 1954. At that time the name was changed from Division of Soils to Department of Soils and Professor William P. Martin came from Ohio State University to become Head. The current name, Department of Soil Science, was adopted in 1958.

The Divisions of Soils and Biochemistry were housed in a building located to the south of McNeil Hall, now housing the College of Home Economics beginning in 1903 when it was built. The Division of Biochemistry moved to the newly completed Snyder Hall in 1927. The Division of Soils moved to its new building in 1958. In addition to the Soil Science Building, Department members now occupy parts of the Plant Science and Crops Research Buildings.

Staff members who have served in the Division or Department since it became a separate entity are given on the following pages. Graduate students and research assistants are listed along with their thesis titles.

The names of numerous people who have worked for the Department over the years are not included in this report. Research could not have been done efficiently without plot supervisors, field crews and laboratory technicians. Nor could it have been prepared for publication without typists and secretaries. Perhaps they may share vicariously in expressions of gratitude to the following presently employed:

To Ed Bonnell, Dean Fairchild, Robert McCaslin and Robert Schoper who carry out the day to day care of field plots and who gather and summarize some of the data.

To Joan Darrell, Mary Huml, Marge Ostergaard, Elvira Dame, Margaret Schultz, Barbara Campbell, Jean Babineau, Barbara Larson, Diane Pederson, Kathy Troge, and June Pose, secretaries, clerks and typists, both state and federal. They type millions of words and tend to the myriad details that keep the paper work flowing.

To Marilyn Flaws, Marsha Patten, Mary Smet and Margaret DuBois, reliable research and laboratory assistants.

To research fellows James Brown and Carl Fliermans, research assistants and numerous graduate and undergraduate laboratory assistants, whose imagination and dedication have been vital to the research effort.

To Katie Hauser who with vigor and care uncovered some forgotten names and publications and who typed the manuscript.

All of these and unnamed others have made important contributions to the Department of Soil Science and to its research output.

About the Bibliography

The bibliographic entries include research and extension done in Minnesota. Included are papers in professional journals, subscription magazines, University, Experiment Station or Extension Service publications, theses, Soil Series progress reports and Soil Survey reports. Since research or extension writing done by staff before or after leaving Minnesota, proceedings of local conferences, many newsletters, class and laboratory teaching mimeographed materials or annual reports are not included, the Bibliography by no means represents the total written output of the Department.

Entries included in the Bibliography are available in the St. Paul campus library. Reprints of only a few of the more recent publications are available in single copy. Inquiries concerning reprints should be directed to the author of the particular publication.

Publications of U. S. Government employees with Departmental appointments who share facilities on the St. Paul campus of the University are also included. Colleagues in the USDA-Agricultural Research Service at Morris, Minnesota print their own publications list.

The Bibliography was prepared for publication by the Department of Soil Science Research Committee in early 1973.

R. G. Gast

D. E. Farrell

D. F. Grigal

R. S. Adams, Jr. (on leave)

W. P. Martin

G. R. Blake, Chairman

FACULTY AND STAFF

Department of Soil Science

University of Minnesota

1888 to 1973

FACULTY AND STAFF

Adams, Jr., Russell S. Ph.D., Univ. of Ill., 1962 soil biochemistry, pollution	Assoc. Professor	1962 - present
Alway, Frederick J. Ph.D., Univ. of Heidelberg, 1897	Chief, Div. of Soils	1913 - 1942 (d. 1959)
Antoine, Pierre Ph.D., Univ. of Minn., 1970 soil genesis, classification, Morocco	Asst. Professor	1970 - present
Arneman, Harold F. Ph.D., Univ. of Minn., 1950 soil genesis, classification	Professor	1946 - present
Baker, Donald G. Ph.D., Univ. of Minn., 1958 soil microclimatology	Professor	1960 - present
Bentley, C. Frederick Ph.D., Univ. of Minn., 1945	Instructor	1942 - 1943
Blake, George R. Ph.D., Ohio State Univ., 1949 soil physics	Professor	1955 - present
Bridgeford, Roy O. B.S., Purdue Univ., 1912 agronomist, Morris	Res. Associate	1918 - 1956 (d. 1972)
Burson, Paul M. M.S., Iowa State Univ., 1941 soil fertility, extension	Professor	1942 - 1969
Caldwell, Alfred C. Ph.D., Univ. of Minn., 1941 soil chemistry, fertility	Professor	1942 - present
Clapp, Charles E. Ph.D., Cornell Univ., 1957 soil biochemistry	Assoc. Professor, ARS	1961 - present
Dowdy, Robert H. Ph.D., Mich. State Univ., 1966 soil and pollution chemistry	Asst. Professor, ARS	1966 - present
Duncan, Elwin R. M.S., Iowa State Univ., 1943 soil fertility, extension	Assoc. Professor	1949 - 1952
Emerson, William W. Ph.D., Univ. of London, 1955 soil physics	Res. Fellow, ARS	1961 - 1962

Evans, Samuel D. Ph.D., Purdue Univ., 1963 soil fertility, Morris	Assoc. Professor	1963 - present
Farnham, Rouse S. Ph.D., Ohio State Univ., 1951 soil genesis, classification, organic soils	Professor	1951 - present
Farrell, David A. Ph.D., Univ. of Melbourne, 1964 soil physics	Professor, ARS	1969 - 1973
Fenster, William E. Ph.D., Univ. of Wis., 1966 soil fertility, extension	Assoc. Professor	1967 - present
Finney, Harlan R. Ph.D., Univ. of Minn., 1966 soil genesis, classification	Res. Associate, SCS	1965 - present
Fraser, William H.	Asst. Professor	1913 - 1914
Frazier, Russell D. Ph.D., Purdue Univ., 1966 soil fertility, Waseca	Asst. Professor	1966 - 1971
Gast, Robert G. Ph.D., Univ. of Missouri, 1959 soil chemistry	Professor	1970 - present
Gortner, Ross A. Ph.D., Columbia Univ., 1909	Assoc. Professor	1914 - 1917 (d. 1942)
Grava, Janis Ph.D., Univ. of Goettingen, 1951 soil fertility	Professor	1955 - present
Grigal, David F. Ph.D., Univ. of Minn., 1968 forest soils and ecology	Asst. Professor	1970 - present
Halsey, Clifton F. M.S., Univ. of Minn., 1954 conservation education, extension	Asst. Professor	1970 - present
Halvorson, Merle V. B.S., Univ. of Minn., 1956 soil fertility, extension	Instructor	1959 - 1964 (d. 1964)
Ham, George E. Ph.D., Iowa State Univ., 1967 soil microbiology	Assoc. Professor	1967 - present
Hanson, Lowell D. Ph.D., Univ. of Minn., 1965 soil resources, land use, extension	Professor	1958 - present

Harris, Roger B.S., Univ. of Minn., 1921 soil conservation, extension	Asst. Professor	1948 - 1963
Hays, Willet M. B.S., Iowa Agr. College, 1881	Professor	1888 - 1891, 1893 - 1905 (d. 1928)
Holt, Robert F. Ph.D., Univ. of Minn., 1951 soil chemistry, fertility, Morris	Professor, ARS	1957 - present
Hungerford, DeForest M.S., Univ. of Minn., 1914	Instructor	1913 - 1915
Jones, Harold E. Ph.D., Purdue Univ. soil fertility, extension	Assoc. Professor	1949 - 1956
Kuehnast, Earl B.S., Iowa State Univ., 1947 climatology	Res. Associate, NWS	1969 - 1973
Kunze, Ray J. Ph.D., Iowa State Univ., 1962 soil physics	Asst. Professor	1962 - 1965
Larson, William E. Ph.D., Iowa State Univ., 1949 soil mechanics	Professor, ARS	1963 - present
Martin, William P. Ph.D., Iowa State Univ., 1937 soil microbiology	Head, Dept. of Soil Science	1954 - present
MacGregor, John M. Ph.D., Univ. of Minn., 1942 soil fertility, chemistry	Professor	1943 - present
McMiller, Paul R. M.S., Univ. of Minn., 1915 soil genesis, classification	Professor	1911 - 1955 (d. 1956)
Meredith, Harvey C. Ph.D., Purdue Univ., 1964 soil fertility, TVA	Res. Associate	1965 - present
Molina, Jean A. E. Ph.D., Cornell Univ., 1967 soil microbiology, Morocco	Assoc. Professor	1970 - present
Munter, Robert M.S., Univ. of Minn., 1966 soil chemist	Res. Fellow	1965 - present
Nelson, Wallace W. Ph.D., Univ. of Minn., 1956 soil fertility, Duluth and Lambertton	Professor	1953 - present

Nesom, George M. B.S., Univ. of Minn., 1916 soil fertility, extension	Professor	1916 - 1942
Nygaard, Iver J. Ph.D., Univ. of Minn., 1933 soil genesis, classification	Res. Associate, SCS	1944 - 1953 (d. 1953)
Overdahl, Curtis J. Ph.D., Purdue Univ., 1957 soil fertility, extension	Professor	1956 - present
Pinckney, Reuben Ph.D., Univ. of Minn., 1924	Instructor	1926 - 1934
Radke, Jerry Ph.D., Univ. of Wis., 1965 soil microclimatology	Asst. Professor, ARS	1966 - present
Randall, Gyles W. Ph.D., Univ. of Wis., 1972 soil fertility, Waseca	Asst. Professor	1970 - present
Rost, Clayton O. Ph.D., Univ. of Minn., 1918 soil chemistry	Chief, Div. of Soils	1913 - 1954
Rust, Richard H. Ph.D., Univ. of Ill., 1955 soil genesis, classification	Professor	1956 - present
Schmidt, Edwin L. Ph.D., Rutgers Univ., 1949 microbiology	Professor	1955 - present
Simkins, Charles A. Ph.D., Kansas State Univ., 1958 soil fertility, extension	Professor	1953 - 1958 1964 - present
Snyder, Harry B.S., Cornell Univ., 1888	Head, Div. of Agr. Chem.	1891 - 1909 (d. 1927)
Soine, Olaf C. Ph.D., Univ. of Minn., 1945 soil classification, fertility, Crookston	Professor	1945 - present
Swan, James B. Ph.D., Univ. of Wis., 1964 physics, extension	Assoc. Professor	1964 - present
Thompson, Mark agronomist, Duluth	Res. Associate	1912 - 1952
Thorfinnson, M. A. B.S., No. Dak. Univ., 1917 soil conservation, extension	Assoc. Professor	1936 - 1954

Van Doren, Cornelius A. Ph.D., Univ. of Ill., 1933 soil conservation	Professor, ARS	1957 - present
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Walker, George W.	Asst. Chemist	1913 - 1914
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VISITING PROFESSORS

Altemueller, Hans J. Forshungsanstalt fuer Landwirtschaft, Braunschweig pedology and tillage	Professor	1965 - 1966
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Barnhisel, Richard I. Univ. of Kentucky soil mineralogy	Assoc. Professor	1972
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Boulaine, Jean Univ. of Paris, Grignon pedology	Professor	1972
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Domergue, Y. R. Univ. of Nancy soil microbiology	Professor	1973
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Greenland, Dennis J. Univ. of Reading chemistry of organic matter	Professor	1970
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Schweikle, Volker Univ. of Hohenheim soil physics	Asst. Professor	1972
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PUBLICATIONS

Department of Soil Science

University of Minnesota

1889 to 1970

PRIOR TO 1900

Hays, W. M. 1889. Sources of home-made manure. Minn. Agr. Exp. Sta. Bull. 8.

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Green, S. B. 1890. Onions on land plowed and unplowed. Minn. Agr. Exp. Sta. Bull. 14.

Hays, W. M. and D. N. Harper. 1892. Fertilizers in Minnesota. Minn. Agr. Exp. Sta. Bull. 20.

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Snyder, H. 1893. Soils. Minn. Agr. Exp. Sta. Bull. 41.

Snyder, H. 1895. Humus in its relation to soil fertility. In Yearbook Agr. (USDA) U. S. Government Printing Office, Washington. pp. 131-142.

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Snyder, H. 1897. Effects of the rotation of crops upon the humus content and fertility of soils. Minn. Agr. Exp. Sta. Bull. 53.

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1901 - 1915

Snyder, H. 1901. Humus and soil fertility. Soc. Prom. Agr. Sci. Proc. 21: 62-65.

Snyder, H. 1901. Influence of wheat farming on soil fertility. Minn. Agr. Exp. Sta. Bull. 70.

Snyder, H. 1904. The influence of crop rotations and crop manures upon the humus content and fertility of soils. Minn. Agr. Exp. Sta. Bull. 89.

Snyder, H. 1905. Soil investigations: 1) Fertilizer tests with wheat and corn, and 2) The loss of nitrogen from the soils. Minn. Agr. Exp. Sta. Bull. 94.

Snyder, H. 1907. Soil investigations. Minn. Agr. Exp. Sta. Bull. 102.

Hays, W. M., A. Boss and A. D. Wilson. 1908. The rotation of crops. Minn. Agr. Exp. Sta. Bull. 109.

1901 - 1915 (cont.)

Snyder, H. 1908. Soils and fertilizers. MacMillan Co., New York.

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Walker, G. W. 1912. The relation of different systems of crop rotation to humus and associated plant food. Minn. Agr. Exp. Sta. Bull. 128.

1916

Alway, F. J. 1916. Some limitations on the cultivation of peat lands in Minnesota. J. Amer. Peat Soc. 9:65-73.

Alway, F. J. and C. O. Rost. 1916. The vertical distribution of phosphorus in the surface soils of prairies. Soil Sci. 2:493-497.

Gortner, R. A. 1916. The organic matter of the soil: I. Some data on humus, humus carbon and humus nitrogen. Soil Sci. 2:395-441.

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Alway, F. J. and J. R. Neller. 1919. A field study of the influence of organic matter upon the water-holding capacity of a silt-loam soil. J. Agr. Res. 16:263-278.

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1920

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Alway, F. J. 1920. Report of Golden Valley peat experimental fields, 1918 and 1919. Minn. Agr. Exp. Sta. Bull. 194.

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1921 - 1922

Alway, F. J. 1921. Availability of Minnesota peat lands for agriculture. Rep. Senate Comte Relative to Iron Ores and Peat Lands. State of Minnesota.

1921 - 1922 (cont.)

Alway, F. J., P. R. McMiller and C. O. Rost. 1921. A successful cooperative experiment on a potash-hungry peat of doubtful lime requirement. Minn. Agr. Exp. Sta. Bull. 224.

Rost, C. O. and F. J. Alway. 1921. Minnesota glacial soil studies: I. A comparison of soils on the late Wisconsin and Iowan drifts. Soil Sci. 11: 161-205.

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Alway, F. J. 1923. Behavior of cement mortar and concrete in some German bogs. J. Amer. Peat Soc. 16:60-66.

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Pinckney, R. M. 1924. Sorghum as an indicator of available soil-nitrogen. Soil Sci. 17:315-321.

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Alway, F. J. and C. O. Rost. 1926. Liming for alfalfa in southeastern Minnesota. Minn. Agr. Ext. Div. Spec. Bull. 107.

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1927

Alway, F. J. 1927. Detection of sulfur-deficiency of soils by means of plants. Int. Congr. Soil Sci., Proc. 1st (Washington, D. C.) III:590-618.

Alway, F. J. 1927. Effect of burning on the forest floor upon the productivity of jack pine land. Int. Congr. Soil Sci., Proc. 1st (Washington, D. C.) III:514-524.

Alway, F. J. and P. M. Harmer. 1927. Minnesota glacial soil studies: II. The forest floor on the late Wisconsin drift. Soil Sci. 23:57-71.

Alway, F. J. and G. H. Nesom. 1927. Inoculation of alfalfa on lime-deficient sandy soils. Minn. Agr. Exp. Sta. Tech. Bull. 46.

Alway, F. J. and I. J. Nygard. 1927. Differentiation between acidity and lime deficiency in the case of peat soils. Int. Congr. Soil Sci., Proc. 1st (Washington, D. C.) II:22-44.

Harmer, P. M. 1927. Minnesota glacial soil studies: III. Density of the surface foot in forest and prairie on the late Wisconsin drift. Soil Sci. 23:73-80.

Rost, C. O. and E. A. Fieger. 1927. Effect of different kinds and amounts of liming materials upon the hydrogen-ion concentration of the soil. Int. Congr. Soil Sci., Proc. 1st (Washington, D. C.) II:2-20.

1928 - 1930

Alway, F. J. 1928. What use can be made of Minnesota's 7,000,000 acres of peat land? Minn. Horticulturist 56:107-113.

McMiller, P. R., R. M. Pinckney and W. M. Methley. 1928. Experiments with soilvita. Minn. Agr. Ext. Div. Pam. 4.

Rost, C. O. 1928. How to find out whether commercial fertilizers can be used with profit on your farm. Minn. Horticulturist 56:169-172.

Arny, A. C., M. C. Hansen and G. H. Nesom. 1929. Reed canary grass. Minn. Agr. Exp. Sta. Bull. 252.

Alway, F. J. and G. H. Nesom. 1930. Protein content of Reed canary grass. J. Agr. Res. 40:297-320.

Arny, A. C., R. E. Hodgson and G. H. Nesom. 1930. Reed canary grass for meadows and pastures. Minn. Agr. Exp. Sta. Bull. 263.

Rost, C. O. 1930. Effects of superphosphates upon the germination of corn. J. Amer. Soc. Agron. 22:498-507.

1931 - 1932

Alway, F. J. 1931. Early trials and use of Reed canary grass as a forage. J. Amer. Soc. Agron. 23:64-66.

Rost, C. O. 1931. Consumption of commercial fertilizers in Minnesota in 1929. Fertilizer Green Book 12:19-20.

Nesom, G. H. and C. O. Rost. 1932. Mixing fertilizers on the farm. Minn. Agr. Ext. Div. Spec. Bull. 147

Rost, C. O. and R. M. Pinckney. 1932. Colorimetric methods for the determination of readily available phosphorus in soils. J. Amer. Soc. Agron. 24:377-395.

Rost, C. O. and J. M. Zetterberg. 1932. Replaceable cases in the soils of southeastern Minnesota and the effect of lime upon them. Soil Sci. 33: 249-277.

1933

Alway, F. J. and J. Kittredge. 1933. The forest floor under stands of aspen and paper birch. Soil Sci. 35:307-312.

Alway, F. J., J. Kittredge and W. J. Methley. 1933. Composition of the forest layers under different forest types on the same soil. Soil Sci. 36:387-398.

Alway, F. J. and P. R. McMiller. 1933. Interrelationships of soil and forest cover on Star Island, Minnesota. Soil Sci. 36:281-295.

Alway, F. J., W. J. Methley and O. R. Younge. 1933. Distribution of volatile matter, lime, and nitrogen among litter, duff, and leafmold under different forest types. Soil Sci. 36:399-407.

1934 - 1937

Alway, F. J., T. E. Maki and W. J. Methley. 1934. Composition of the leaves of some forest trees. Amer. Soil Survey Ass. Bull. 15.

Alway, F. J. and J. M. Zetterberg. 1935. Relative amounts of calcium carbonate and magnesium carbonate in some Minnesota subsoils. Soil Sci. 39: 9-14.

Alway, F. J., A. W. Marsh and W. J. Methley. 1937. Sufficiency of atmospheric sulfur for maximum crop yields. Soil Sci. Soc. Amer. Proc. 2:229-238.

1938 - 1940

Pinckney, R. M. and F. J. Alway. 1939. Reliability of the proposed suction method of determining the moisture equivalent of soils. *Soil Sci.* 48:403-411.

Rost, C. O. 1939. The relative productivity of some humid subsoils. *Soil Sci. Soc. Amer. Proc.* 4:281-287.

Alway, F. J. 1940. A nutrient element slighted in agricultural research. *J. Amer. Soc. Agron.* 32:913-921.

1941 - 1942

Rost, C. O. and R. M. Pinckney. 1941. The use of raw sewage sludge filter cake as fertilizer. *Minn. Agr. Exp. Sta. Misc. Paper* 450.

Caldwell, A. C. and C. O. Rost. 1942. The chemical composition of the clay fractions of the black prairie soils of Minnesota. *Soil Sci.* 53:249-263.

Thorfinnson, M. A. 1942. Contour strip cropping. *Minn. Agr. Ext. Div. Folder* 108.

Thorfinnson, M. A. 1942. Wind erosion control. *Minn. Agr. Ext. Div. Bull.* 235.

1943

Burson, P. M. and R. F. Crim. 1943. Pasture renovation. *Minn. Agr. Ext. Div. Bull.* 115.

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1944

Alway, F. J. 1944. Effectiveness of calcium metaphosphate and fused calcium phosphate on alfalfa. *J. Amer. Soc. Agron.* 36:73-88.

1944 (cont.)

Burson, P. M. and C. O. Rost. 1944. Improving victory garden fertility. Minn. Agr. Ext. Serv. Pam. 132.

Crim, R. E. and P. M. Burson. 1944. Well-managed pastures. Minn. Agr. Ext. Serv. Bull. 241.

Rost, C. O. and P. M. Burson. 1944. Commercial fertilizers for Minnesota in 1944-45. Minn. Agr. Ext. Serv. Circ. 218.

1945

Alway, F. J. and G. H. Nesom. 1945. Influence of phosphorus deficiency of the soil on the protein content of alfalfa. J. Amer. Soc. Agron. 37:555-569.

Burson, P. M. 1945. Liming soils in Minnesota. Minn. Agr. Ext. Serv. Folder 137.

Burson, P. M. and C. O. Rost. 1945. True soil conservation is many-sided. Minn. Farm and Home Sci. 2:6-9.

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Rost, C. O. 1945. Fertilizers increase potato yields in the Red River Valley. Minn. Farm and Home Sci. 2:15.

Rost, C. O. 1945. The importance of soil organic matter. Minn. Horticulturist 73:68-69.

Rost, C. O., H. W. Kramer and T. M. McCall. 1945. Fertilizers for potatoes in the Red River Valley. Minn. Agr. Exp. Sta. Bull. 385.

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SOIL SURVEYS*

Department of Soil Science

University of Minnesota

1904 to 1970

* All Soil Surveys in the State of Minnesota are included although a few do not carry the names of Department of Soil Science members.

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SOIL SERIES
Progress Reports

Department of Soil Science
University of Minnesota

1943 to 1970

SOIL SERIES

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3. 1943 Rost, C. O., P. M. Burson and M. C. Rogers. Results of cooperative fertilizer experiments on corn in Cottonwood County in 1942.
4. 1943 Rost, C. O. Work in progress in the Division of Soils.
5. 1943 Burson, P. M. Pasture improvement and management outline.
6. 1943 Burson, P. M. and C. O. Rost. Making garden soils productive.
7. 1948 *Burson, P. M. and C. O. Rost. Outline of soil fertility and conservation projects and lessons*
8. 1944 Caldwell, A. C. and C. F. Murphy. Results of cooperative fertilizer experiments in Waseca County in 1943.
9. 1944 MacGregor, J. M., C. F. Bentley and R. E. Jacobs. Results of cooperative fertilizer experiments in McLeod County in 1943.
10. 1944 Hays, O. W. and C. O. Rost. The effect of depth of surface soil and contouring on crop yields in Minnesota.
11. 1945 Caldwell, A. C. Plowing under fertilizer for crops in Minnesota.
12. 1945 Caldwell, A. C. Fertilizer trials on corn in Mower County.
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14. 1945 Rost, C. O. The importance of soil organic matter.
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16. 1946 Dunn, L. E. and C. O. Rost. Fertilizer for potatoes on the light-textured soils of central and north-central Minnesota.
17. 1946 MacGregor, J. M. Fertilizer trials on sandy soils of Chisago and Isanti Counties in 1946.
18. 1947 Rost, C. O. and P. M. Burson. Comparative trials with rock phosphate and superphosphate in Minnesota.
19. 1947 MacGregor, J. M. Fertilizer trials for corn on the sandy soils of Anoka, Sherburne, Isanti and Chisago Counties in 1946.
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23. 1948 Caldwell, A. C. Fertilizer trials in Mower County, 1947.
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25. 1949 Caldwell, A. C. Fertilizer trials in Mower County, 1948.
26. 1949 MacGregor, J. M. and E. R. Duncan. A progress report of fertilizer trials on the Fayette and Tama soils in southeastern Minnesota, 1947.
27. 1949 MacGregor, J. M. and E. R. Duncan. A progress report of fertilizing oats on several soil types in east central Minnesota in 1948.
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34. 1951 Extension Specialists and Staff of the Division of Soils. Phosphate facts.
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43. 1956 Jones, H. E. and C. A. Simkins. Minnesota x-tra yield corn contest. Yield results 1955.
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52. 1959 Grava, J. The quality of agricultural limestone.
53. 1959 Bennett, R. E., J. F. Gabieu, A. S. Robertson, G. R. Blake, R. A. Briggs, J. R. Gute, C. J. Overdahl, H. G. Routhe, W. F. Hueg, W. P. Martin and A. C. Caldwell. Recommendations for growing continuous corn in Minnesota.
54. 1959 MacGregor, J. M. Effect of nitrogen fertilization as anhydrous ammonia on 1954 corn and on the following 1955 crop.
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59. 1960 MacGregor, J. M. Soil erosion experiments at Rosemount in 1959.
60. 1960 Rost, C. O. Soils of Minnesota -- yesterday and today.
61. 1960 Martin, W. P. Recruiting and training new players for the plant nutrient team.
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63. 1961 Martin, W. P. and G. R. Blake. How the agricultural scientist views the problem of agricultural adjustment.
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72. 1964 Baker, D. G. Summary of climatological and microclimatological investigations.
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74. 1960 Staff. A report on soils and soil fertility.
75. 1961 Staff. A report on soils and soil fertility.

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77. 1963 Staff. A report on field research in soils.
78. 1964 Staff. A report on field research in soils.
79. 1965 Staff. A report on field research in soils.
80. 1966 Staff. A report on field research in soils.
81. 1967 Staff. A report on field research in soils.
82. 1968 Staff. A report on field research in soils.
83. 1968 Arneman, H. F. and R. H. Rust. Soil survey of the Southwest Agricultural Experiment Station.
84. 1969 Staff. A report on field research in soils.
85. 1969 Overdahl, C. J. and C. P. Klint. Soil fertility trials on potatoes.
86. 1970 Staff. A report on field research in soils.

GRADUATE THESES

Department of Soil Science
University of Minnesota

1914 to 1970

GRADUATE THESES

1914

Hungerford, D. (F. J. Alway). 1914. Minnesota peat soils. M.S. Thesis.

1915

Chapman, J. E. (F. J. Alway). 1915. A study of the fertilizer requirements of a high moor. M.S. Thesis.

Harmer, P. M. (F. J. Alway). 1915. A study of the chemical constituents of thirty-seven peat bogs of southern Minnesota. M.S. Thesis.

McMiller, P. R. (F. J. Alway). 1915. A study of the glacial and loessal soils of the most southernly tier of counties in Minnesota. M.S. Thesis.

Thuma, R. (F. J. Alway). 1915. Pot experiments. M.S. Thesis.

1916

Clapp, F. C. (F. J. Alway). 1916. Productivity of certain peat soils as related to their chemical composition. M. S. Thesis.

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1917

Roth, E. G. (F. J. Alway). 1917. The character of the peat soils of Anoka County. M.S. Thesis.

Shaw, W. M. (F. J. Alway). 1917. Indicators of the lime requirements of soils. M.S. Thesis.

1918

Rost, C. O. (F. J. Alway). 1918. Parallelism of the soils developed on the gray drifts of Minnesota. Ph.D. Thesis.

Russel, J. C. (F. J. Alway). 1918. The relation of certain physical and chemical properties to the soil class. M.S. Thesis.

1919

Morrow, C. (F. J. Alway). 1919. The organic matter of the soil: a study of the nitrogen distribution in different soil types. Ph.D. Thesis.

1920

Harmer, P. M. (F. J. Alway). 1920. A glacial soil study: uniformity of the late gray drift of Minnesota. Ph.D. Thesis.

1924

Bodman, G. B. (F. J. Alway). 1924. The availability of nitrogen in peats. M.S. Thesis.

Fieger, E. A. (C. O. Rost). 1924. Hydrogen-ion concentration studies of Minnesota soils. Ph.D. Thesis.

Pinckney, R. M. (F. J. Alway). 1924. Freezing points of soils at the moisture equivalent. Ph.D. Thesis.

1926

Cutler, J. V. (F. J. Alway). 1926. The effect of an interrupting layer upon the downward movement of water in the soil. M.S. Thesis.

Nygaard, I. J. (F. J. Alway). 1926. A study of two very strongly acid peat soils. M.S. Thesis.

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Bodman, G. B. (F. J. Alway). 1927. Some characteristics and criteria of the Red Drift. Ph.D. Thesis.

Ellis, J. H. (F. J. Alway). 1927. Using alfalfa to reduce flooding in the Red River Valley. M.S. Thesis.

1929

Neal, J. H. (F. J. Alway). 1929. The upward movement of water in some Minnesota soils. M.S. Thesis.

1931

Zetterberg, J. M. (C. O. Rost). 1931. Exchangeable bases in the soils of southeastern Minnesota. M.S. Thesis.

1932

Hide, J. C. (F. J. Alway). 1932. Characteristics of the profile of the Fargo soils in the Red River Valley. M.S. Thesis.

Hill, S. N. M. (F. J. Alway). 1932. Some characteristics of the Glyndon soil series. M.S. Thesis.

1933

Kneen, E. (F. J. Alway). 1933. The organic matter of Minnesota soils. M.S. Thesis.

Nygaard, I. J. (F. J. Alway). 1933. Identification of lime-deficient peat soils in advance of field trials. Ph.D. Thesis.

1934

Younge, O. R. (F. J. Alway). 1934. A chemical investigation of peat bogs in Mille Lacs and Kanabec Counties, Minnesota. Ph.D. Thesis.

1935

Hide, J. C. (F. J. Alway). 1935. The cause of certain unproductive spots in the Red River Valley. Ph.D. Thesis.

1936

Hwang, S. T. (C. O. Rost). 1936. The reliability of rapid chemical tests for plant nutrients. M.S. Thesis.

1937

Chong, H. (C. O. Rost). 1937. Profile development in some chernozem soils of the Red River Valley. M.S. Thesis.

Sherman, G. D. (F. J. Alway). 1937. Occurrence and distribution of dolomite in the subsoils of the Red River Valley. M.S. Thesis.

1937 (cont.)

Soine, O. C. (C. O. Rost). 1937. Properties of some soils developed on the till plain of the Red Drift in Pine County, Minnesota. M.S. Thesis.

1938

Marsh, A. W. (F. J. Alway). 1938. Atmospheric contribution of sulfur to the soils of Minnesota. M.S. Thesis.

1939

Chang, P. (C. O. Rost). 1939. Characteristics of some magnesium solonchak of the Red River Valley. M.S. Thesis.

Hsu, P. (C. O. Rost). 1939. Characteristics of the soils of the western half of the Black Prairie region in Minnesota. M.S. Thesis.

Miller, E. V. (F. J. Alway). 1939. Movement of water in uniform soils not in contact with a water surface. M.S. Thesis.

Palmer, G. (C. O. Rost). 1939. The movement of liming materials in the soil profile as influenced by time. M.S. Thesis.

Pang, T. (C. O. Rost). 1939. Some properties of the soils of the eastern half of the Black Prairie region in Minnesota. M.S. Thesis.

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Chepil, W. S. (F. J. Alway). 1940. The relation of wind erosion to some physical soil characteristics. Ph.D. Thesis.

Crossley, D. I. (F. J. Alway). 1940. Rooting habits of maple and ash on the pedocals of Manitoba and Saskatchewan. M.S. Thesis.

Rowles, C. A. (C. O. Rost). 1940. A study of factors affecting the stability of soil aggregates. Ph.D. Thesis.

Wicklund, R. E. (P. R. McMiller). 1940. The relation of the growth of corn on the Webster soils to their content of carbonates. M.S. Thesis.

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Caldwell, A. C. (C. O. Rost). 1941. The chemical composition of the fine clay fractions from Minnesota Black Prairie soils. Ph.D. Thesis.

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Krieger, R. A. (C. O. Rost). 1942. The effect of applications of sodium chlorate on the exchangeable bases of the soil. M.S. Thesis.

McAuliffe, C. D. (F. J. Alway). 1942. Amount and movement of water-soluble sulfur in Minnesota soils. M.S. Thesis.

MacGregor, J. M. (C. O. Rost). 1942. The influence of soil conditions and fertilizer treatment on the composition of the potato plant. Ph.D. Thesis.

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1944

Orellana, R. (J. M. MacGregor). 1944. The effect of heavy applications of borax on the boron content of the soils and certain plants. M.S. Thesis.

1945

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Brown, A. L. (A. C. Caldwell). 1945. The chemical composition of the colloidal clay fraction of some solodi soils of Minnesota. Ph.D. Thesis.

Soine, O. C. (P. R. McMiller). 1945. The relationship of slope and erosion to the physical and chemical characteristics of the Tama and Fayette soils of southeastern Minnesota. Ph.D. Thesis.

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Arneman, H. F. (P. R. McMiller). 1946. A field and laboratory study of the productivity of the principal soil types of McLeod County, Minnesota. M.S. Thesis.

Williams, D. E. (C. O. Rost). 1946. A study of the black and brown pigments of soil humus and their distribution throughout the soil profile. Ph.D. Thesis.

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1948

Ahmed, M. S. (C. O. Rost). 1948. Relation of slope to depth of top soil and to certain soil properties. M.S. Thesis.

Toogood, J. A. (C. O. Rost). 1948. The adequacy of major plant nutrients in certain Minnesota soils under a soil management program. Ph.D. Thesis.

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X Chavali, P. S. (J. M. MacGregor). 1949. Conservation studies on an erosive loess soil. M.S. Thesis.

Halvorson, A. R. (A. C. Caldwell). 1949. Factors affecting the nitrate producing power of some Minnesota soils. Ph.D. Thesis.

Khan, A. D. (P. R. McMiller). 1949. The chemical properties of related prairie soils as influenced by differences in soil relief. Ph.D. Thesis.

Kinsey, C. (J. M. MacGregor). 1949. Fertilizer trials with oats on Milaca very fine sandy loam. M.S. Thesis.

Krieger, R. A. (C. O. Rost). 1949. A study of several minor elements in some podzol soils. Ph.D. Thesis.

Overdahl, C. J. (C. O. Rost). 1949. Relation of spacing and hill population to yield of field corn and sweet corn under near optimum conditions of fertility and moisture. M.S. Thesis.

1950

Arneman, H. F. (P. R. McMiller). 1950. The physical and mineralogical properties of related Minnesota prairie soils. Ph.D. Thesis.

Brage, B. L. (A. C. Caldwell). 1950. The effect of long-time treatments on the yield and chemical constituents of the soil. Ph.D. Thesis.

Keogh, J. L. (J. M. MacGregor). 1950. Cobalt in some Minnesota soils and grasses. M.S. Thesis.

Maki, T. E. (C. O. Rost). 1950. Some factors affecting the composition and development of forest floor. Ph.D. Thesis.

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Baker, D. G. (C. O. Rost). 1951. Top and root production of several legumes as influenced by fertilizer treatments. M.S. Thesis.

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Holt, R. F. (P. R. McMiller). 1951. Properties and interrelationships of wooded soils in northern Minnesota. Ph.D. Thesis.

Shubeck, F. O. (A. C. Caldwell). 1951. The effect of fertilizer rates, ratios and plant populations on corn yields. Ph.D. Thesis.

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Pathak, C. H. (R. S. Dunham and C. O. Rost). 1952. Effect of pre-emergence treatment with 2,4-D on weeds in corn and on various soil properties. Ph.D. Thesis.

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Keogh, J. L. (P. M. Burson and C. O. Rost). 1953. A study of soil testing methods for Minnesota soils. Ph.D. Thesis.

Mulvehill, J. F. (J. M. MacGregor). 1953. The effect of boron applications on the yield and boron content of oats and alfalfa. M.S. Thesis.

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Ehrlich, W. A. (P. R. McMiller). 1954. Pedological processes of some Manitoba soils. Ph.D. Thesis.

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Engelstad, O. P. (P. M. Burson and C. O. Rost). 1954. The effect of lime on soils of southeastern Minnesota. M.S. Thesis.

Halsey, C. (J. M. MacGregor). 1954. The effect of the time of application of commercial fertilizers on the yield of corn, oats and hay. M.S. Thesis.

Ogata, G. (A. C. Caldwell). 1954. Nitrate content and hydrogen-ion concentration of soils and nitrogen content of oat plants as affected by rates of liming. Ph.D. Thesis.

Torman, L. (C. O. Rost). 1954. Influence of fertilizer on the sugar content in tops and roots of three legumes. M.S. Thesis.

1955

Hutcheon, W. L. (A. C. Caldwell). 1955. Moisture flow induced by thermal gradients within unsaturated soils. Ph.D. Thesis.

1956

Hanson, L. D. (H. F. Arneman). 1956. Some characteristics of eight Minnesota grassland soils. M.S. Thesis.

Hovland, D. (P. M. Burson). 1956. Chemical properties of Primghar silty clay loam as influenced by additions of calcium carbonate and fertilizer. M.S. Thesis.

Nelson, W. W. (J. M. MacGregor). 1956. The effect of rate, ratio and time of fertilizer application on the yield, composition and longevity of alfalfa. Ph.D. Thesis.

Ray, H. E. (J. M. MacGregor). 1956. Studies on the uptake of nitrogen by corn as influenced by nitrogen fertilization and the movement of labeled nitrogen in the soil. Ph.D. Thesis.

Stoeckler, J. H. (P. R. McMiller). 1956. Soil factors affecting the growth of quaking aspen forests in the Lake States. Ph.D. Thesis.

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Chapman, J. W. (R. S. Farnham and W. P. Martin). 1957. An investigation of the efficacy of some nitrogen containing fertilizer materials prepared for Minnesota peat. M.S. Thesis.

Chin, N. L. (A. C. Caldwell). 1957. The influence of various nitrogen carriers on the availability of fertilizer phosphorus by plants. Ph.D. Thesis.

Cho, C. M. (A. C. Caldwell). 1957. Available phosphorus and forms of phosphorus in several soils of Minnesota. M.S. Thesis.

Pawluk, S. (H. F. Arneman). 1957. A study of some forest soil characteristics and their relation to jack pine growth. Ph.D. Thesis.

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Baker, D. G. (A. C. Caldwell and G. R. Blake). 1958. A comparison of two evapotranspiration calculation methods and the application of one to determine some climatic differences between great soil groups of Minnesota. Ph.D. Thesis.

Boelter, D. H. (G. R. Blake). 1958. The influence of calcium and magnesium level, fibrous root growth, manure and fertilizer on the stability of soil aggregates. M.S. Thesis.

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Franzmeier, D. P. (H. F. Arneman). 1958. The effect of fertilizers on the growth and nitrogen concentration of red pine seedlings grown in a forest nursery. M.S. Thesis.

Hovland, D. (A. C. Caldwell). 1958. Some soil-plant relationships of potassium and magnesium. Ph.D. Thesis.

Paul, E. A. (E. L. Schmidt). 1958. The extraction and quantitative estimation of free amino acids in soils. Ph.D. Thesis.

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Adams, E. P. (G. R. Blake). 1959. Effects of deliberate packing on some soil physical properties and crop yields. M.S. Thesis.

Ahlrichs, L. E. (J. M. MacGregor). 1959. Studies on the effect of application time and placement of urea nitrogen on the yield and composition of field corn and on nitrogen movement. M.S. Thesis.

Anderson, R. C. (J. M. MacGregor). 1959. Comparative effect of five nitrogen and of liquid and solid mixed fertilizer on yield and composition of corn. M.S. Thesis.

Cho, C. M. (J. M. MacGregor). 1959. Effect of pH upon the charge of clays and cationic distribution around clay particles. Ph.D. Thesis.

Ellis, J. E. (P. M. Burson). 1959. A study of the factors that determine the effective application of soil management practices in Wright County, Minnesota. M.S. Thesis.

Foss, J. E. (R. H. Rust). 1959. A study of the origin and distribution of loess and of the degree of soil-profile development in two loess-derived soils in south-eastern Minnesota. M.S. Thesis.

Holcombe, G. D. (P. M. Burson). 1959. The effect of nitrogen fertilization upon the establishment of a legume-grass seeding and upon the companion crop. M.S. Thesis.

Schwartzbeck, R. A. (J. M. MacGregor). 1959. Studies on fertilizer nitrogen and its loss to the atmosphere. Ph.D. Thesis.

Weber, J. B. (A. C. Caldwell). 1959. The effect of fertilizer on yield and chemical composition of soybeans. M.S. Thesis.

1960

Aase, J. K. (G. R. Blake). 1960. Regeneration of artificially packed soils. M.S. Thesis.

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Burau, R. G. (J. M. MacGregor). 1960. Soil studies on iron chlorosis of soils. M.S. Thesis.

Hirekerur, L. R. (R. H. Rust). 1960. Characterization of clay in some great soil groups by x-ray diffraction patterns. M.S. Thesis.

Kline, J. R. (A. C. Caldwell). 1960. The effect of potassium compounds of variable water solubility on yield and composition of plants. M.S. Thesis.

Reddy, G. G. (R. H. Rust and A. C. Caldwell). 1960. Studies of phosphorus uptake in oats grown on some non-alkaline soil series representative of major great-soil groups of Minnesota. M.S. Thesis.

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Blanchar, R. W. (A. C. Caldwell). 1961. Evaluation of concentrated superphosphate and diammonium phosphate as phosphorus source when applied to calcareous soils of Minnesota. M.S. Thesis.

Grimes, M. F. (H. F. Arneman). 1961. The characterization and classification of some soils developed from mixed brown and gray tills in central Minnesota. M.S. Thesis.

Hanson, R. G. (J. M. MacGregor). 1961. Soil and plant studies on some effects of a decade of alfalfa fertilization on Port Byron silt loam. M.S. Thesis.

Harpstead, M. I. (R. H. Rust). 1961. A pedological characterization of some profiles in the gray wooded soil area of Minnesota. Ph.D. Thesis.

Hermanson, H. P. (W. P. Martin). 1961. The fertility of some Minnesota peat soils. Ph.D. Thesis.

Jorgensen, J. R. (E. L. Schmidt). 1961. Studies on the nature and occurrence of organic acids in soils. Ph.D. Thesis.

Miller, R. H. (E. L. Schmidt). 1961. The availability of some forms of soil nitrogen to microorganisms decomposing cellulose. M.S. Thesis.

Takyi, S. K. (A. C. Caldwell). 1961. The effects of drying, moisture levels and cropping intensity on the availability to plants of applied and native soil potassium. M.S. Thesis.

1962

Atwereboanda, A. (J. M. MacGregor). 1962. Investigations of available boron present in some soils of east central Minnesota. M.S. Thesis.

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Boelter, D. H. (R. H. Rust). 1962. A study of some physical properties of several peat materials and their relation to field water conditions in the peat bog. Ph.D. Thesis.

Duffy, P. J. B. (H. F. Arneman). 1962. Relationships between site factors and growth of lodgepole pine (Pinus contorta Dougl. var. latifolia Engelm.) in the Foothills section of Alberta. Ph.D. Thesis.

Pluth, D. H. (H. F. Arneman). 1962. Forest soil and tree growth characteristics related to a synecological coordinate system. M.S. Thesis.

1963

Becker, G. (E. L. Schmidt). 1963. Studies with Aspergillus flavus in relation to intermediate nitrification. Ph.D. Thesis.

Bezdicek, D. F. (J. M. MacGregor). 1963. Zinc availability of some Minnesota soils. M.S. Thesis.

Bonnie-Baffoe, E. (G. R. Blake). 1963. Compaction and nutrient uptake. M.S. Thesis.

Burau, R. G. (J. M. MacGregor). 1963. An investigation of soil factors in iron deficiency chlorosis of soybeans. Ph.D. Thesis.

Gunderson, O. M. (J. M. MacGregor). 1963. Zinc investigations on some calcareous soils of Minnesota. M.S. Thesis.

Hirekerur, L. R. (R. H. Rust). 1963. Clay mineralogy and release and fixation of potassium in some soil series of Minnesota. Ph.D. Thesis.

Peterson, J. R. (J. M. MacGregor). 1963. Boron fertilization of corn and alfalfa in Minnesota. M.S. Thesis.

Takyi, S. K. (A. C. Caldwell). 1963. Exchangeable aluminum, acidity and water-soluble phosphate in some acid Minnesota soils as affected by added potassium monobasic phosphate and calcium hydroxide. Ph.D. Thesis.

Weber, J. B. (A. C. Caldwell). 1963. Soil and plant potassium as affected by soil temperature, moisture and continuous cropping. Ph.D. Thesis.

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Blanchar, R. W. (A. C. Caldwell). 1964. A study of mechanisms for the effect of ammonium on the availability of fertilizer phosphorus to plants. Ph.D. Thesis.

1964 (cont.)

Hanson, R. G. (J. M. MacGregor). 1964. An investigation of fertilizer nitrogen losses to the atmosphere from three Minnesota soils. Ph.D. Thesis.

Hora, T. S. (E. L. Schmidt). 1964. Nitrification by soil fungi. M.S. Thesis.

Kline, J. R. (R. H. Rust). 1964. An investigation of copper and other selected elements in soils utilizing gamma radiations induced by thermal neutron activation. Ph.D. Thesis.

Lee, K. W. (A. C. Caldwell). 1964. The effect of phosphorus on RNA and DNA content of soybeans. M.S. Thesis.

Li, P. Y. W. (A. C. Caldwell). 1964. The oxidation of elemental sulfur in soils. M.S. Thesis.

Maxwell, R. K. (D. G. Baker). 1964. Temperature measurements and the calculated heat flux in the soil. M.S. Thesis.

Miller, R. H. (E. L. Schmidt). 1964. Intact assimilation of amino acids from sterile soil by Phaseolus vulgaris. Ph.D. Thesis.

Pan, S. (E. L. Schmidt). 1964. Estimation of keto acids occurring in soils. M.S. Thesis.

Phillips, M. W. (A. C. Caldwell). 1964. Importance of organic phosphorus in predicting soil phosphorus availability. Ph.D. Thesis.

Seefeldt, D. D. (G. R. Blake). 1964. Shear strength of Webster clay loam aggregates. M.S. Thesis.

1965

Ahrichs, L. E. (J. M. MacGregor). 1965. Ammonium fixation and release on some Minnesota soils. Ph.D. Thesis.

Foss, J. E. (R. H. Rust). 1965. Soil genesis study of a lithologic discontinuity observed in glacial drift in western Wisconsin. Ph.D. Thesis.

X Hanson, L. D. (R. S. Farnham and W. P. Martin). 1965. Soil characteristics and changes in Minnesota land use. Ph.D. Thesis.

Hatcher, H. (E. L. Schmidt). 1965. On the utilization of amino acids by Aspergillus flavus for nitrification. Ph.D. Thesis.

Pluth, D. J. (H. F. Arneman). 1965. A site evaluation for jack pine in north-central Minnesota. Ph.D. Thesis.

Rehm, G. W. (A. C. Caldwell). 1965. Sulfur oxidation and supplying power of some Minnesota soils. M.S. Thesis.

1966

Bonnie-Baffoe, E. (G. R. Blake). 1966. The effects of pressure and oxygen differentials applied to roots on some growth characteristics of corn seedlings. Ph.D. Thesis.

Carlson, W. E. (J. M. MacGregor). 1966. Fertilizer effect on Kentucky bluegrass seed production in Roseau County, Minnesota. M.S. Thesis.

JX Espinoza, W. G. (R. S. Adams). 1966. The interaction of atrazine with the herbicides CDAA, linuron, amiben or trifluralin and phosphorus on the growth of soybeans. M.S. Thesis.

Finney, H. R. (R. S. Farnham). 1966. Some characteristics of four raised bogs in northern Minnesota: stratigraphic relationships and mineralogical properties in the inorganic fraction. Ph.D. Thesis.

Harris, A. R. (D. G. Baker). 1966. Solar radiation reception and distribution and its correlation with sunshine. M.S. Thesis.

Idso, S. B. (D. G. Baker). 1966. The energy environment of plants and its effect upon plant productivity. M.S. Thesis.

Munter, R. C. (R. H. Rust). 1966. Soil variability in two field plot areas for eleven chemical determinations. M.S. Thesis.

Nelson, S. E. (R. S. Adams). 1966. The effect of salts in solution on the leaching of atrazine in soils. M.S. Thesis.

Seim, E. C. (A. C. Caldwell). 1966. Soil, crop and atmospheric studies on sulfur in Hubbard County, Minnesota. M.S. Thesis.

Sun, C. (A. C. Caldwell and R. S. Adams). 1966. The interaction of soil applied sulfur and nitrogen and the effect of several phosphorus fertilizers on growth and chemical composition of Sorghum vulgare. M.S. Thesis.

1967

Abdalrauf, H. S. (E. L. Schmidt). 1967. Immunofluorescent staining for the study of Aspergillus flavus. M.S. Thesis.

Bezdicek, D. F. (J. M. MacGregor and W. P. Martin). 1967. Inorganic nitrogen transformations and nitrogenous gas products as affected by soil-fertilizer geometry. Ph.D. Thesis.

Clark, C. (E. L. Schmidt). 1967. A study of the utilization of organic compounds by Nitrosomonas europaea. Ph.D. Thesis.

Idso, S. B. (D. G. Baker). 1967. The photosynthetic response of plants to their environment: a holocoentic method of analysis. Ph.D. Thesis.

1967 (cont.)

Krentos, V. D. (R. H. Rust). 1967. Micronutrient supply of surface horizons from selected Minnesota soils as to the soybean plant Glycine Max. (L.) Merrill as related to certain Rhizobium japonicum strains. Ph.D. Thesis.

Lin, S. (G. R. Blake). 1967. Porosity and pore-size distribution of soil aggregates. M.S. Thesis.

Norman, J. M. (D. G. Baker). 1967. An application of harmonic analysis to an in situ determination of soil thermal diffusivity. M.S. Thesis.

Olness, A. E. (C. E. Clapp). 1967. Preparation and characterization of a montmorillonite-polysaccharide complex. M.S. Thesis.

Pietz, R. I. (J. M. MacGregor). 1967. Available zinc in some Minnesota soils. M.S. Thesis.

1968

Blad, B. L. (D. G. Baker). 1968. A two year study of net radiation at St. Paul, Minnesota. M.S. Thesis.

Bohlool, B. B. (E. L. Schmidt). 1968. Fluorescent antibody for ecological studies of Rhizobium japonicum. M.S. Thesis.

Feilinger, H. (A. C. Caldwell). 1968. Performance of new sulfur fertilizer formulations. M.S. Thesis.

Grigal, D. F. (H. F. Arneman). 1968. The relationship between plant communities and soils in northeastern Minnesota. Ph.D. Thesis.

Gross, E. R. (R. H. Rust). 1968. The estimation of crop yield by multiple regression methods on some principal soils of Minnesota. M.S. Thesis.

Larsen, D. M. (J. Grava). 1968. The effect of fertilization on seed production of timothy in northwestern Minnesota. M.S. Thesis.

Lee, K. W. (C. E. Clapp). 1968. Phosphorus fractions and growth of the soybean plant as affected by phosphorus supply. Ph.D. Thesis.

Randall, G. W. (J. Grava). 1968. An investigation of the variability in fertility of variously fertilized Minnesota soils. M.S. Thesis.

Singer, M. J. (L. D. Hanson and R. H. Rust). 1968. Movement of lead added to the surface of a Waukegan soil. M.S. Thesis.

1969

- Arya, L. M. (G. R. Blake). 1969. Stabilization of shear-generated soil aggregates. M.S. Thesis.
- Bowman, B. T. (R. S. Adams). 1969. The effect of water upon malathion adsorption onto five montmorillonite systems. Ph.D. Thesis.
- Hwang, C. (G. R. Blake). 1969. Wet strength of silica-diluted synthetic soil aggregates. M.S. Thesis.
- Leslie, R. C. (A. C. Caldwell). 1969. Poly- and orthophosphate fertilizer effects on soybeans (Glycine Max.). M.S. Thesis.
- Maxwell, R. K. (D. G. Baker). 1969. The development of a miniature solarimeter and its utility in testing light models applied to soybeans. Ph.D. Thesis.
- Olson, L. L. (J. Grava). 1969. An investigation of methods to determine the lime requirements of Minnesota soils. M.S. Thesis.
- O'Neil, J. A. (E. L. Schmidt). 1969. Morphological studies of Nitrosomonas europaea during various stages of growth. M.S. Thesis.
- Peterson, J. R. (R. S. Adams). 1969. Soil properties influencing DDT bioactivity. Ph.D. Thesis.
- Rehm, G. W. (A. C. Caldwell). 1969. The effect of ammonium and nitrate nitrogen upon sulfur uptake by corn (Zea mays). Ph.D. Thesis.
- Sun, C. (R. S. Adams). 1969. Physiological effects of the phosphorus-atrazine (2-chloro-4-ethylamino-6-isopropylamino-s-triazine) interaction in soybean plants (Glycine Max.). Ph.D. Thesis.
- Turner, M. A. (R. H. Rust). 1969. Chromium: effect on the mineral nutrition of two varieties of Glycine Max. (L.) Merrill and the adsorption by selected Minnesota soils. Ph.D. Thesis.

1970

- Antoine, P. R. (R. H. Rust). 1970. Mineralogical, chemical and physical studies on the genesis and morphology of a Rockwood sandy loam. Ph.D. Thesis.
- Blad, B. L. (D. G. Baker). 1970. Growth characteristics, plant geometry, and energy environment of soybeans. Ph.D. Thesis.
- Fuentes, V. C. (G. R. Blake). 1970. Soil matric suction changes with time in pressed soil briquettes. M.S. Thesis.
- Pan, S. (E. L. Schmidt). 1970. Free-living nitrogen-fixing bacteria in controlled soil-plant root system. Ph.D. Thesis.

1970 (cont.)

Seim, E. C. (A. C. Caldwell). 1970. Sulfur dioxide absorption by soil.
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