

**LAND DRAINING: A
HANDBOOK FOR FARMERS
ON THE PRINCIPLES AND
PRACTICE OF FARM DRANING**

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Land Draining: A Handbook for Farmers on the Principles and Practice of Farm Draning by
Manly Miles

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Land Draining

A Handbook for Farmers

— ON THE —

PRINCIPLES AND PRACTICE

— OF —

FARM DRAINING

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Preface.

A book on farm draining is evidently needed at the present time, to bring within reach of practical farmers the established facts of science relating to the principles and advantages of thorough drainage, and the best and most economical method of making farm drains.

Under the present conditions of American farm practice, one of the most prominent defects in the prevailing system of management appears to be a lack of attention to thorough drainage as a means of diminishing the cost of production, and insuring uniformly remunerative returns in crop growing, by increasing the fertility of the soil, and avoiding the losses from unfavorable seasons. The manifest neglect of this important branch of rural economy by the majority of farmers is undoubtedly owing, to a great extent, at least, to the frequent failures observed in draining, from the practice of imperfect methods, and vague, or incorrect notions, in regard to the real advantages to be derived from draining.

This is not surprising, as attention has been turned in other directions, and the most valuable contributions to the principles of drainage, of late years, have been confined, in the main, to periodicals and reports not generally accessible to farmers, and there is no book on this special subject in which may be found a description of the best method of making tile drains, or an adequate discussion of the latest developments of science in their relations to the principles of drainage. Many of the

maxims in draining, of but a few years ago, have become obsolete, and more consistent methods have been adopted in the best modern practice, while the progress of science has extended our knowledge of correct principles, and made clear many details in regard to the most favorable conditions for growing crops, which are of great practical importance.

In this *Handbook for Farmers*, the aim has been to present the leading facts of practical significance, in connection with a popular discussion of the applications of science, and the results of experiments relating to draining have been summarized in tables in convenient form for reference, which furnish ready answers to many of the economic questions that will be suggested to the intelligent farmer.

An outline of the history of draining is given to illustrate the progress of discovery and invention in developing correct principles of practice, and the directions for laying tiles, which are the results of an extended experience in draining under widely different conditions, are confidently recommended as a decided improvement on former methods.

Lansing, Mich., 1892.

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CHAPTER I.

GENERAL PRINCIPLES.

The rapid growth of science, and the development of the mechanic arts which have made possible the unprecedented activity in the industries during the past quarter of a century, have brought about economic changes in methods of production, which must be taken into consideration in attempts to improve the practice and increase the profits of agriculture.

From the intense competition in farm products of all kinds, arising from the extraordinary development of facilities for cheap transportation, the farmers of the United States are directly interested in every means of diminishing the cost of production, to enable them to hold a commanding position in the world's markets, and obtain remunerative returns for their labor, without impairing the value of their invested capital. The business methods that have been found necessary to insure success in other pursuits must be adopted, and attention must be given to every available means of increasing the productiveness of the soil and making the labor expended on it more effective, while the losses resulting from bad seasons must be reduced to a minimum by the intelligent direction and control of the forces of nature.

One of the first steps in the direction of improved methods of farm practice is to put the soil in a condition to yield the best net returns from the elements of plant food which it naturally contains, or that may be applied to it in the home supplies of manure. The questions that may arise in regard to artificial, or purchased fertility,