GROWTH OF CULTIVATED PLANTS,
5th Ed. Vol. 2 of Principles of Agronomy

In this second volume of Principles of Agronomy, Prof. Demolon, the eminent French agronomist, who died in October 1954, examines the influence of environmental factors on plant growth. This volume and the first, entitled Dynamics of Soil, constitute a vast synthesis of fundamental knowledge concerning the relations between plants, soil, and climate. Prof. Demolon devoted the greater part of his career to the work from which these volumes were produced. He was his life-long desire to formulate the laws from which it could become possible to predict with reasonable accuracy the influence of certain practices on crop production. "The facts of agriculture do not escape the laws of nature, despite the multiplicity of factors which give them a conjectural character," he wrote in the preface to this edition.

This book is written primarily for plant physiologists and agronomists—teachers as well as researchers—and students of agricultural colleges. Chapters include the following: Physical Factors of Growth, Chemical Factors of Growth, The Root System, Water. Mineral Nutrition; Nitrogen, Phosphorus, and Sulphur; Potassium and Sodium. Other Elements; Toxicity; The Plant and its Biological Environment; Laws of Plant Growth; Fertilization; Yields; Principles of Field Experiments; and Chemical Analysis of Plants.

Dr. Demolon’s two volumes give one of the most comprehensive non-English treatments to general agronomic principles and practices—L.H.P.

AGRICULTURAL ECOLOGY

A new book in a field as new as agricultural ecology, or crop ecology, is an important event. Professor Azi defines agricultural ecology as "The study of the physical characteristics of environment, climate, and soil in relation to the development of agricultural plants and to the yield of such plants from the quantitative, qualitative, and generative points of view."

The author has had a wide-ranging experience with many plants and has brought together a vitally important series of studies and their relations to their environments. His insistence on consideration of the phasic development of crops, with different climatic requirements and susceptibilities for each phase, is a concept which needs much wider appreciation by crop ecologists and agronomists in general. The student of crop ecology will find this a challenging and worthwhile volume.

Professor Azi claims to have originated "Agricultural Ecology," and states that the name was first used on June 4, 1920. The present reviewer took a course in "Crop Ecology" under W. L. Burison of the University of Illinois in the spring of 1917, and the course was first given in the early part of 1915. K. H. W. Klages took the same course in 1921–22 and received the inspiration which led to his "Ecological Crop Geography," which was published in 1942. Professor Azi at no time refers to Klages. In 12 pages of bibliography there are 11 references to work in the United States, of which the most recent is to Garver and Allard’s original work on photoperiodism, published in 1920.

Even more remarkable, despite the fact that this translation is published in Great Britain, there are only two citations to work from England and the British Commonwealth, including Canada.

Those who live in glass houses should not throw stones; and since references to work outside the United States are even more rare than this in the majority of publications from this country, it ill becomes us to criticize the omissions of works from another country. However, for this particular subject, if the author had known of the work in the United States, he would have found that J. W. Smith, W. L. Burison, K. H. W. Klages, R. L. Lowhorn, L. H. Huber, and others, have been developing the subject of crop ecology in this country over much the same period that he has been developing it in Italy.

The translation is hard reading—it is an almost literal, not an idiomatic translation. The author’s notes—e.g., those of farmers about planting in the dark of the moon—C. J. Willard.

DRAINAGE OF AGRICULTURAL LAND
A Bibliography of Selected References

The author’s purpose in compiling this volume is (a) to bring together in one book the known facts on hardiness for use by those engaged in basic plant physiological studies or for those workers concerned with agronomic problems dealing with crop responses to environment and (b) to stimulate further research by presenting hypotheses based on known facts but which must be tested experimentally.

A review of older research work is included because some of the older experiments may have been performed more carefully than the newer ones. Also, due to a declining interest in the field, some of the older work has not been repeated in recent years and serves as the sole source of information.

The book is divided into three main parts: (1) Low temperature hardiness; (2) Low moisture or drought hardiness; and (3) High temperature hardiness.

Low temperature hardiness is given the most extensive coverage. Some of the topics covered in this section are the limits of low temperature hardiness, temperature of plants exposed to freezing, ice formation, chilling and frost injury, measurement of frost hardness, variations with environment, relation of frost hardiness to growth and development, relation of total and bound water content and cell sap concentration and sugars to frost hardiness, and the mechanism of frost injury and hardiness.

Low moisture or drought hardiness is covered by the following chapters: limits of drought hardiness, drought injury, measurement of drought hardness related to growth and development, associated factors, mechanism of drought injury and hardiness, tolerance of drought dehydration and dehydration hardiness.

The section on high temperature hardiness deals with the limits of high temperature hardiness, heat injury, heat hardiness, mechanism of heat hardness and hardness to dehydration, heat, and other injurious agents.

An extensive list of references which covers 45 pages is a very important part of the book and should prove to be a valuable aid to the research worker or student.

The author is to be commended for the painstaking work which has resulted in a book containing a wealth of information on the hardiness of plants.

NATIVE GRASSES
Legumes and Forbs
By Phillips Petroleum Co., Bartlesville, Okla. Section I, 30 pp.; Section II, 28 pp., illus., color. 1936.

These first two sections in a series of pamphlets covering pasture and range plants include 53 excellent color plates of the more important legumes and forbs found on rangelands. The characteristics of each plant are listed and described, including statements on their environment, economic value, and response to management. Teachers and students should find this an excellent aid in identifying the various species, and the pamphlets could well serve as a ready reference to anyone active in pasture and range management. More than a score of USDA and state experimentation station workers in the Great Plains states contributed to guidance and technical assistance in the production of these pamphlets. The color plates are of exceptionally high quality.