# SCIENCE AND PRACTICE OF FODDER CONSERVATION

## The Science and Practice of Conservation

Grass and Forage Crops. By Dr. S. J. Watson. In 2 vols. Vol. 1. Pp. xi + 415. Vol. 2. Pp. vii + 417–820. (London: *Fertiliser and Feeding Stuffs Journal*, 1939.) 2 vols., 30*s*.

FARM animals are wintered on fodder and root crops, supplemented by concentrates, that is, grain, milling offals, oil-seed residues, etc.; the fodder, roots, and frequently the grain also are home grown. The preservation of the fodder crops, for use in the winter, presents more difficulties than that of the other home-grown foods, and the quality of the product is very variable, depending on the kind of crop, its stage of maturity when cut, etc. The quality of the product is important, because it governs the amount and kind of concentrates that have to be purchased.

Two recent developments, the improvements in the technique of making silage, and the application of artificial drying to grass and other fodder crops, have aroused much interest among farmers and research workers in fodder conservation, since they have resulted in widening the range of crops for preservation, and also in making it possible to preserve them at a younger stage; these developments have brought within reach of the farmer fodders of higher nutritive value, and with a greater proportion of proteins.

On the Continent of Europe, the new and improved methods of making silage have resulted in the preservation, for use in winter, of large areas of clover, or of grass and clover mixtures, while in Great Britain interest has been aroused in the conservation of young pasture grass by artificial drying, and by ensiling. Young grass contains up to 20 per cent, or more, of crude protein in the dry matter, and its conservation would dispense with the need for purchasing most of the concentrated foods now fed to cattle, sheep and horses.

It can be readily understood how important this possibility is in a country like Great Britain, which is so suited by climatic and other conditions for producing grass Even in the United States, where there are such ample supplies of grain and of some oil-seed residues, much interest is shown in the possibility of reducing the requirements of concentrates by improvements in the quality of fodders.

Dr. S. J. Watson, in "The Science and Practice of Conservation", has brought together, from all parts of the world, the results of research and practical experience in fodder conservation, and the two volumes present an excellent account of the state of knowledge on all aspects of the subject. The first volume deals with the various processes of conservation, natural drying, artificial drying, and ensilage; separate chapters are devoted to the losses of nutrients in each of these processes. The author directs attention to the heavy rate of losses in haymaking, pointing out that the losses are really heavier than are commonly supposed because of the failure to realize that the actual loss of feeding value exceeds that of the dry matter, since the material lost is the most digestible part.

Silage-making occupies a large share of the volume. Before discussing the old and the new methods, the author deals fully with the principles underlying the making of silage. Although the crops for ensiling and the climatic conditions vary from one country to another, the fundamental requirements of successful silage-making are the same, and this volume gives the research worker the type of information that will help him to solve the problems involved in directing the chemical and biological changes in the material in the desired direction.

The second volume deals with the nutritive values of the various conservation products, and contains accounts of the numerous feeding trials reported in the literature. One chapter is devoted to the effects of conservation products on dairy produce, a subject of great importance in peace time in those countries exporting cheese and butter. The last chapter is devoted to the place of conservation in agricultural practice at home and abroad, and deals also with its effect in cheapening the costs of foods for human consumption, and in improving their quality with regard to the health of the nation.

Dr. Watson, by reason of the large amount of research that he has carried out on this subject at Jealotts' Hill, and of his contacts with the practical aspects of the problems, is well qualified to undertake the writing of such a work. Both volumes are of great value to all those interested in fodder conservation, and can be particularly recommended to those engaged in research investigations touching any aspects of this subject.

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