

ANIMAL SCIENCE TEXTBOOK SERIES

Pond/Maner

# Swine Production and Nutrition





ANIMAL SCIENCE TEXTBOOK SERIES

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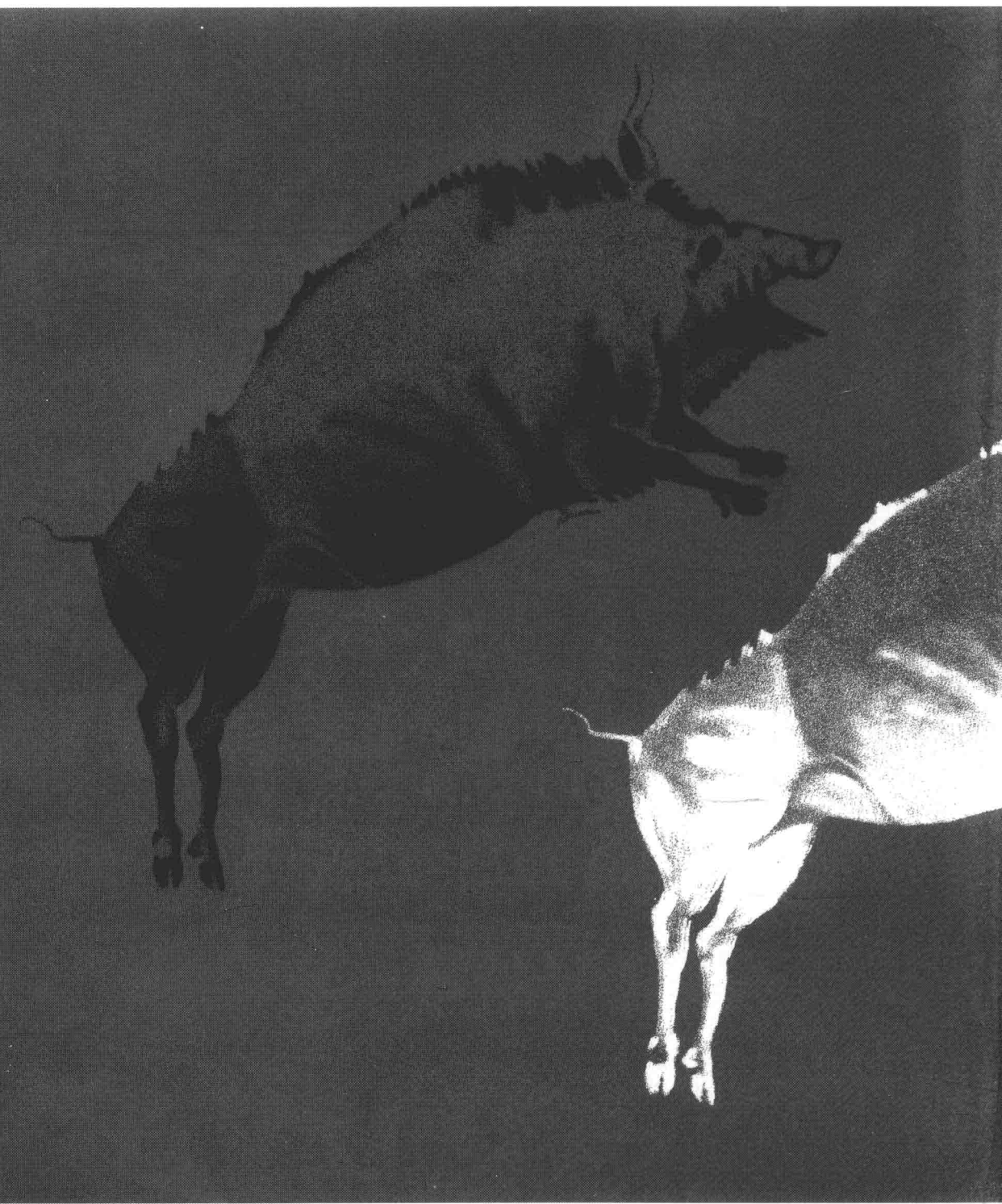
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# **Swine Production and Nutrition**

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## Preface

The purpose of this text as stated in the preface to our book "Swine Production in Temperate and Tropical Environments," 1974, is to provide a technical basis for successful production of pork in both temperate and tropical environments. The competitive position of pork as a food source both in the developed and developing countries has continued to be strengthened during the past 10 years. In this book, we update the current knowledge and technology upon which pork production is based—covering extensively the new knowledge of feeds and their nutrient values.

The current growth of the world swine population is faster than that of the human population, reflecting the high demand for pork among consumers in all parts of the world. Advances in genetics, physiology, nutrition, and biotechnology have permitted continued improvements in efficiency of pork production, and prospects are bright for continued advances. The principles of modern production technology addressed in this book provide the basis for application by the swine industry in a broad range of environmental and economic settings. We have attempted to present a balanced coverage of the biological, economic, and husbandry aspects of swine production for use by college and university students, personnel in the feed and food industries, livestock extension specialists, and commercial swine producers. We hope that this book will contribute to the continued role of swine production in providing a means by which human nutrition can be enhanced by maximizing the use of surplus and noncompetitive feed resources in complex and varied plant-animal ecosystems. Innovative and balanced approaches to meeting the food needs of an expanding human population in the decades ahead will be required, and we believe pork production will play an important role in fulfilling this challenge.

We express our sincere appreciation to the U.S. Department of Agriculture for making available its office and library facilities and to the Rockefeller Foundation for providing the opportunity for one of us (JHM) to prepare this book. We are indebted to Martha Daza, Peggy Green, and Sherry Hansen for the stenographic work.

W. G. Pond  
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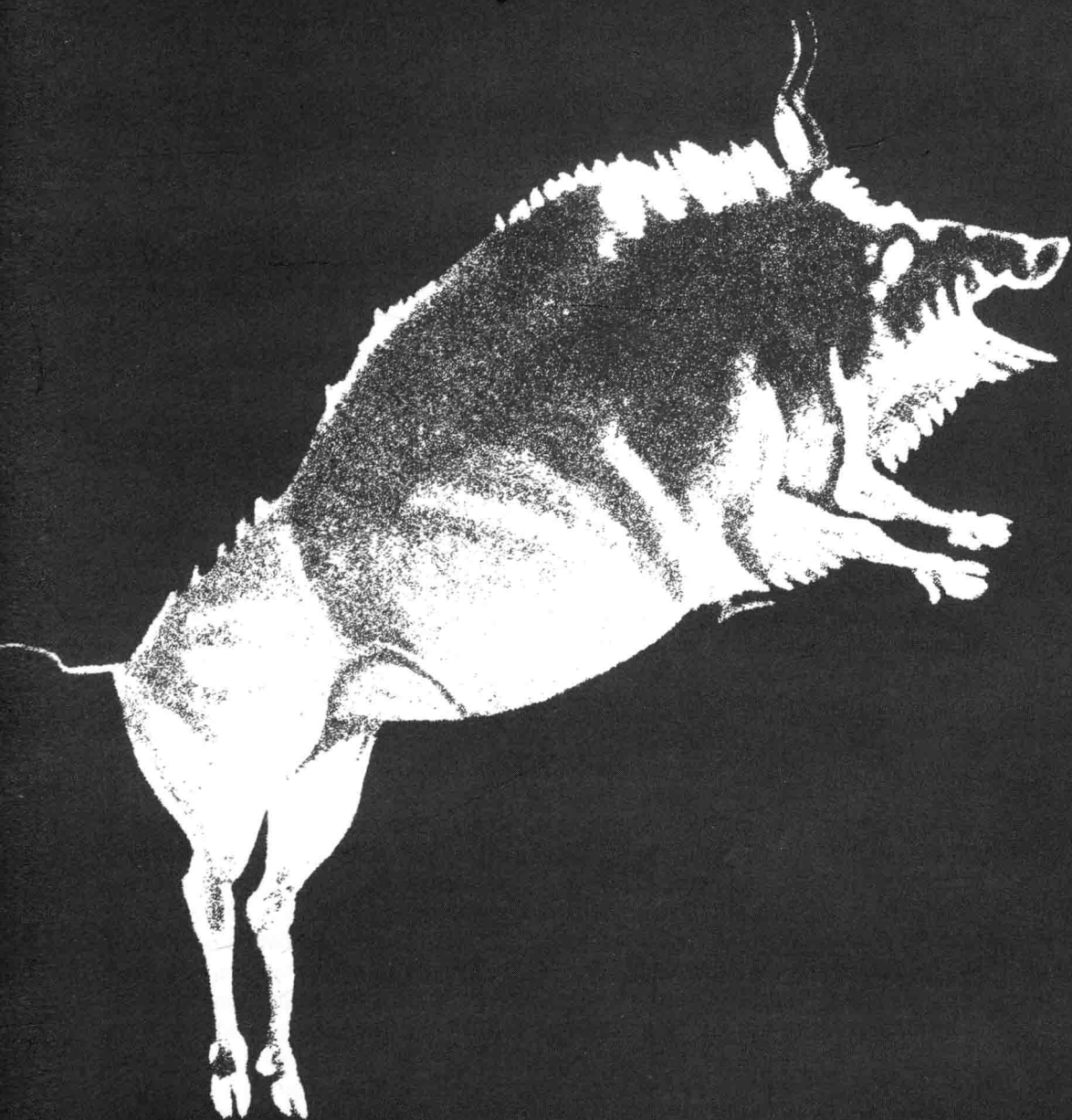
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Part I

# The Pork Industry







# The Past, Present, and Future of Swine Production

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## INTRODUCTION

The technical knowledge of any subject cannot be applied most effectively without an appreciation of the magnitude of its importance. In this introductory chapter we paint a broad picture of the swine industry in the context of the past, present, and future. The objectives are to illustrate the scope of significance of the pig to human welfare and to provide the background information necessary for building a technical knowledge of swine production for application in all parts of the world.

## EVOLUTION AND DOMESTICATION

The evolution and domestication of the pig has been described in several books (Towne and Wentworth 1950; Mellen 1952; Briggs 1969; Mason 1969), and the student interested in a detailed account of this fascinating story is referred to them. Recorded domestication appears in Biblical accounts as early as 2000 B.C. Despite some ancient cultural and religious taboos forbidding the consumption of pork, the domestication of the pig as a source of human food has persisted, and the continued increases in numbers of swine throughout the world up to the present time provide evidence of the contribution of the pig to human nutrition through the ages.

The pig has been traditionally a scavenger, and in early domestication it was raised as a means of utilizing human food wastes. In many parts of the world the pig still performs this function as a "backyard" inhabitant (see Figs. 1.1 and 1.2). Even in the developed countries some swine produced for commercial pork are fed kitchen wastes. However, such enterprises are closely controlled by local

FIG. 1.1. (a) Pigs on the north coast of Colombia. (b) Pigs tethered in the mountains of Ecuador.



and state government health regulations (such as those requiring that raw garbage be cooked) to prevent the spread of diseases to humans and other animals.

The proportion of commercially produced swine fed on garbage (kitchen wastes) in the developed countries is less than 1% of total production. Most commercial swine production in the developed countries is located in areas where cereal grains, maize (corn), and other high-energy feeds are grown in large quantities and are available at low cost. A classic example of the relatively recent development of commercial swine production on a large scale based on the availability of a source of high-energy feedstuffs is that of the “corn belt” of the United States. The corn belt, located in the north-central section of the United States, has soil and climate conditions that are ideal for the production of large amounts of high-yielding corn (*Zea mays*) hereafter referred to as maize (Fig. 1.3). The cultivation of hybrid maize and the use of fertilizer have resulted in yields of feed energy per acre far above anything realized before their introduction. The abundance of favorably priced feedstuffs provides an opportunity to convert this energy to pork for sale at a greater profit than could be obtained by selling the maize as a cash crop. Because of the profitability of swine production in the United States, the pig long ago became known among farmers as “the mortgage lifter.”