CENTENNIAL ISSUE—MAJOR ADVANCES IN DAIRY SCIENCE IN THE LAST TWENTY-FIVE YEARS

FOREWORD

In commemoration of the 100th anniversary of the founding of the American Dairy Science Association, we are pleased to present the centennial issue of the *Journal of Dairy Science*. Articles in this issue will highlight major historical events and key people associated with ADSA since our 75th anniversary meeting, major changes that have occurred, the challenges facing dairy extension and dairy teaching personnel, and major advances that have occurred in the scientific disciplines with which our members are affiliated. Gratitude is expressed to the invited authors who have contributed to this issue of the Journal. We regret that some invited authors were not able to meet publication deadlines, leaving some gaps in our intended coverage.

In this issue, you can read about recently discovered health benefits from bioactive constituents in milk and other dairy products. These are potentially beneficial in weight loss programs, control of hypertension, and prevention of cancer. Also presented are new dietary guidelines on consumption of milk to reduce the risk of osteoporosis. New processing technologies that improve traditional dairy products and facilitate creation of new ones for an expanding market are highlighted. There is information on new dairy products with improved nutrition and product functionality for specific applications. The latest on dairy marketing and improved analytical methods for use in milk component analysis are discussed.

You will learn about how new discoveries are advancing our understanding of mammary development and the mechanisms of milk secretion. Through genetic engineering, there is progress toward using animals to produce biologically active proteins not normally found in milk. New reproductive technologies include sexed semen, cloning, transgenics, and preimplantation genetic diagnosis for improved performance. New coordinated systems of reproductive management are based on a more thorough understanding of the endocrine, cellular, and molecular factors controlling ovarian and uterine function. Information is presented on the influence of heat stress on embryo development and about how high milk production has altered cooling and housing requirements for dairy cows. New paradigms in control of cattle diseases are discussed.

Important information on the effect of nutrition on productivity, milk composition, efficiency of production,

animal health, environmental sustainability, and profitability is presented in this issue. You will read about how advances in molecular biology are being used to study nutritional effects on tissue and cellular function, and how this information is currently used and may be used in the future to improve feed efficiency, profitability of dairy farms, and animal health systems.

There have been significant advances in genetic evaluation, especially for additional traits related to health and reproduction of dairy cows. Genetic improvement for most of the last 25 years has focused almost completely on production and type traits. Therefore, selection indices have been expanded to include traits associated with health and reproduction. Germplasm of dairy cows has become a global entity with free flow of semen and embryos internationally. Developments are reported on genomics for genetic improvement of cows.

You will notice a different writing style in these articles than you are accustomed to seeing in the Journal, particularly for the science articles. We chose 4 to 6 broad topics under each scientific discipline and asked the authors to highlight the major advances that have occurred in their topic area over the last 25 years. We asked that they not write comprehensive literature reviews, but rather present the major advances in a literary style that would appeal to a general audience. People and places associated with the major advances are identified, but reference citations rarely appear in the text. The work that has been referred to is found in the reference section of each article. We hope that this style of writing will encourage dairy scientists to read the entire issue, not just those articles most closely related to their scientific interest. Moreover, we hope that this style will encourage students, educators, industry persons, consultants, and government policy makers who may or may not be members of ADSA to read these articles with interest. We think that this will be a valuable resource for you in the years that follow.

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