

Undergraduate Certificate in Dairy Cattle Production Management

DOI:10.31274/air.14491

Christen G. Burgett, Associate Teaching Professor, Department of Animal Science, Iowa State University
Jennifer M. Bundy, Assistant Professor, Department of Animal Science, Iowa State University
Elisabeth Huff-Lonergan, University Professor, Department of Animal Science, Iowa State University
Jodi A. Sterle, Professor, Department of Animal Science, Iowa State University
Joan E. Cunnick, Professor, Department of Animal Science, Iowa State University
Laura L. Greiner, Assistant Professor, Department of Animal Science, Iowa State University
Elizabeth A. Bobeck, Associate Professor, Department of Animal Science, Iowa State University
Nicholas K. Gabler, Professor, Department of Animal Science, Iowa State University
Steven M. Lonergan, Morrill Professor, Department of Animal Science, Iowa State University

Summary and Implications

Iowa State University (ISU) offers undergraduate certificates to demonstrate completion of a curriculum in a specialized area across various disciplines. The certificate has the significant benefit of allowing students to customize their curriculum and document the completion of an approved course of study. A Dairy Cattle Production Management Certificate is offered within the Animal Science Department at ISU. The certificate requirements are organized to correspond with faculty and employer-defined needs for a successful transition from ISU student to dairy cattle industry professional.

The Dairy Cattle Production Management certificate will integrate technical topics in animal science with practical considerations in enterprise management. Two critical components to the certificate are completion of either the Dairy Systems Management course or the Applied Dairy Farm Management course, and a required internship that focuses on dairy cattle production management. Students that complete the certificate will have the background to identify and address challenges in modern dairy cattle production enterprises. Further, the certificate will assist employers in identifying students that have shown the interest, discipline, and ability to complete this specialized study program.

Introduction

The dairy industry is vital to the economy in the USA and Iowa. Iowa has a competitive advantage in dairy production due to several factors such as necessary infrastructure, natural resources, inputs, and experience. Thus, Iowa continues to be a significant contributor to dairy production on a national scale. Iowa's dairy industry generates an estimated total of \$5.6 billion, and supplies 15,587 Iowa jobs with a labor income of \$891 million. Nationally, Iowa ranks 12th in total milk production and 8th in milk per cow. Additionally, according to 'A

Comprehensive Review of Iowa's Dairy Industry' (2020), Iowa's milk production represents 2.45% of total U.S. milk produced, valued at \$8.69 billion. Moreover, national trends project that dairy products will increase in profitability, and forecasters expect that dairy revenue will continue to rise by 1.1 percent to \$39.9 billion by 2024. The dairy industry is part of the Iowa, U.S., and global economy. It requires a workforce with technical competency to manage dairy production, nutrition, genetics, health programs, and facilities. The demand for young professionals with expertise in dairy cattle production management is rapidly growing, particularly in Iowa. Hence, students with documented expertise in this certificate program will be ready to contribute to this growing industry, and employers will hire them. Students need a clear path to customize and document their training and expertise in this area. Documentation of the certificate on their transcript will allow students to demonstrate pursuit and completion of a customized course of study and have achieved competency in dairy cattle production management.

Approach

The objective was to develop a dairy cattle production management course of study within the requirements of an undergraduate certificate. Students who complete the certificate will be able to:

- Demonstrate a breadth of understanding of nutrition, physiology, and breeding applications in contemporary dairy cattle production systems.
- Evaluate production systems and provide solutions to ensure the efficient production of safe, high-quality dairy products.
- Recognize issues that affect the utilization of natural resources in dairy cattle production systems.
- Demonstrate competence in hands-on and practical applications in their field.

Iowa State University Animal Industry Report 2022

- e. Demonstrate the knowledge, skills, and abilities necessary for a dairy cattle production management career.

Requirements of the Dairy Cattle Production Management Certificate

The Dairy Cattle Production Management Certificate program prompts students to customize their certificate with course work that emphasizes specific scientific disciplines and production practices. This 24-credit certificate provides the appropriate background and context for developing their dairy cattle production and management expertise.

The certificate requirements are organized to correspond with faculty and employer-defined needs for a successful transition from ISU student to dairy cattle industry professional. Successful completion of the certificate requires a minimum of 18 credits at the 300 (junior) or 400 (senior) level. The program integrates dairy cattle production principles with foundation disciplines in animal science. All courses in the certificate are available, and full descriptions are available in the Iowa State University Catalog (<https://catalog.iastate.edu>). The certificate requires completion of courses within the following categories: Foundation (3 credits), Fundamental Disciplines (9 credits), Expertise Expansion (3 credits from a menu), Enterprise Management (3 credits from a menu), and Dairy Cattle Production Emphasis (6 credits from a menu). Per ISU policy, nine credits will be unique to the certificate and will not be applied to a major, minor, or another certificate.

Availability of the Dairy Cattle Production and Management Certificate

The Dairy Cattle Production Management Certificate has been approved by the Department of Animal Science Curriculum Committee, the College of Agriculture and Life Sciences College Curriculum committee, and the Faculty Senate. Therefore, the Dairy Cattle Production Management Certificate will be available to ISU undergraduate students beginning in the fall of 2022.

DAIRY CATTLE PRODUCTION MANAGEMENT CERTIFICATE (24 CREDITS)

Foundation Course (3 credits)		Credits
AN S 235	Dairy Cattle Science	3
Fundamental Disciplines (9 credits)		
AN S 320	Animal Feeds and Feeding	3
AN S 331	Domestic Animal Reproduction	3
AN S 337	Lactation	3
Expertise Expansion (3 Credits)		
AGRON 280	Crop Development, Production, and Management	3
AGRON 334	Forage Crop Management	3
AN S 333	Embryo Transfer and Related Technologies	3
AN S 335	Dairy Cattle Evaluation	3
AN S 345	Growth and Development of Domestic Animals	3
AN S 352	Genetic Improvement of Domestic Animals	3
ANS 419	Advanced Animal Nutrition	2
FS HN 407	Microbiological Safety of Foods of Animal Origins	3
MICRO 302	Biology of Microorganisms	3
TSM 327	Animal Production Systems	3
TSM 455	Feed Processing and Technology	3
TSM 457	Feed Safety, Ingredient Quality, and Analytics	3
Enterprise Management (3 credits)		
AGEDS 451	Agricultural Law	3
ECON 230	Farm Business Management	3
ECON 235	Introduction to Agricultural Markets	3
ECON 332	Cooperatives	3
ECON 334	Entrepreneurship in Agriculture	3
ECON 337	Agricultural Marketing	3
Dairy Cattle Production Emphasis (6 credits)		
AN S 434 OR AN S 435	Dairy Systems Management OR Applied Dairy Farm Evaluation	3
AN S 399A	Dairy Internship Experience	3