

AGRICULTURAL COLLEGES IN SOUTH AFRICA – MILK SA SURVEY, OCTOBER 2025

	INSTITUTION	DETAILS	LEARNING CONTENT AND ASSESSMENT
1	Cedara Agricultural College Cedara	• Module theme: Dairy Production • NQF level 5 • Credit value:32 • Pre-requisite modules: Animal Production 1, Animal Production 2	<u>Learning tasks: topics and lectures</u> • Introduction to the dairy production • Production planning • Breeding and selection • Calf & heifer rearing • Nutrition • Health • Fertility management • Milk harvesting and handling • Marketing and processing • Record keeping and herd management systems • Environment <u>Self-study assessments</u> • Presentation on topical issues • Heat stress essay • Disease presentation • Poster on milking parlours • Milk recording report • Video on milking procedures and milking hygiene • Report on visit to dairy processor • Portfolio of evidence
2	Elsenburg Agricultural Training Institute Elsenburg Ms M van Niekerk Lecturer: Animal Production 021 808 7010 0828279502		<u>Dairy Cow Management</u> (Diploma: 1st-year module) Focuses on the fundamentals of the dairy herd life cycle and physiological stages. ○ Topic 1: Introduction to dairy cattle ○ Topic 2: Dairy breeds

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	Marguerite.VanNiekerk@westerncape.gov.za		○ Topic 3: The raising and feeding of calves ○ Topic 4: The managing of dairy heifers ○ Topic 5: Management principles for the dry cow ○ Topic 6: The Lactating dairy cow ○ Topic 7: Feeding standards for dairy cows ○ Topic 8: Bull management <u>Dairy Production and Management</u> <i>Diploma: 2nd-year module</i> Provides in-depth coverage of milking procedures, breeding and reproduction management, milk physiology, milk harvesting, and milk constituents. Includes a focus on milking parlours and their components, and concludes with an introduction to animal health. ○ Topic 1: The principles of breeding and selection ○ Topic 2: Management of the dairy herd ○ Topic 3: Dairy science ○ Topic 4: The composition of milk ○ Topic 5: The milking machine ○ Topic 6: Milking systems ○ Topic 7: Herd health <u>Dairy Cow Management</u> <i>B.Agric: 3rd-year module</i> Covers the dairy herd life cycle and physiological stages in greater depth. Students also complete a bovine artificial insemination (AI) course and write the National AI registration examination, qualifying as

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			certified National Cattle Inseminators. In addition, B.Agric students complete an extensive Animal Health module presented by a State Veterinarian, as well as prior modules in animal breeding and dairy breeds. ○ Topic 1: Introduction to dairy cattle ○ Topic 2: Management of the dairy herd ○ Topic 3: The raising and feeding of calves ○ Topic 4: The managing of dairy heifers ○ Topic 5: Management principles for the dry cow ○ Topic 6: The Lactating dairy cow ○ Topic 7: Feeding standards for dairy cows ○ Topic 8: Bull management <u>Dairy Production</u> <i>B.Agric: 3rd-year module</i> Explores the anatomy and physiology of the udder, milking parlours and their components, the milk production process, milk composition, factors influencing composition, and milk hygiene. Students are also introduced to dairy processing (basic cheesemaking) and dairy products, as well as undesirable flavours in milk. ○ Topic 1: Milk harvesting ○ Topic 2: The composition of milk ○ Topic 3: Factors that influence the composition of milk ○ Topic 4: Dairy processing ○ Topic 5: The milking machine ○ Topic 6: Milking systems ○ Topic 7: Milk hygiene

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			○ Topic 8: Off flavours in milk and cream
3	Cape Institute of Agricultural Training		
4	Fort Cox College of Agriculture and Forestry Middeldrift, Stutterheim Head of Dept: Dr B Moyo bmoyo@fortcox.ac.za 040 653 8034	• Updated: 2025.09.01 • Name of Qualification - Diploma in Agriculture: Animal Production • Duration: 14 weeks • SAQA Credits: 18 • Handbooks: • The Dairy Farming Handbook. Author: Dr C.J.C. Muller Directorate: Animal Sciences Research and Technology Development Services (RTDS) Western Cape Department of Agriculture.	Topics and Learning Units • Dairy Production Industry ○ Overview of the SA dairy industry ○ Importance of dairy production ○ Factors influencing the regionalization and scale of milk production ○ Terminology of the dairy industry • Dairy Cattle Breeds in SA ○ Descriptive features and other characteristics ○ Choosing a breed ○ Criteria for selection of breed and individual animals within the breed(s) • Dairy Farming Systems ○ Total mixed ration ○ Pasture-based ○ Mixed systems • Dairy Cow Nutrition ○ Feed management for dairy cows ○ Use of concentrates for the milking herds ○ Nutritional requirements at different production phases ○ Feeding and management of dry and steam-up cows • Calf Rearing ○ Calf care soon after birth ○ Colostrum feeding ○ Use of milk replacers

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			○ Calves Housing and grouping ○ Post-colostrum feeding to weaning ○ Use of calf starter feed ○ Health management ○ Diseases affecting dairy calves ○ Biosecurity measures to prevent diseases ○ Calf weaning from milk ○ Identification of dairy calves ○ De-horning and removal of extra teats ● Management of Breeding Cattle ○ Heifer selection ○ Feeding heifers at 3 to 6 months, 6 to 12 months, 12 months to late gestation ○ Feeding concentrates ○ Management in first lactation ● Milking and Milk quality ○ Milking systems and components ○ Milking procedure and practices for quality milk (preparation for milking, Milking Routine, Cluster Attachment, Milking Quality, Washing Up, Mastitis Prevention) ○ Milking parlour hygiene ○ Udder structure ○ Roles of oxytocin and epinephrine in milk production ○ Factors affecting milk yield & composition ○ Milking frequency and milk production ○ Mastitis and milk quality ● Reproductive Management of Dairy Cattle ○ Methods of breeding ○ Oestrus synchronization in dairy production ○ Heat detection signs and aids

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			○ When to inseminate ○ Breeding efficiency (performance indices, influencing factors) ○ Interval from calving to first service ○ Breeding records ○ Artificial insemination (semen storage, handling of semen, thawing of semen, insemination) ○ Calving down management (dystocia, disinfecting the uterus, retained placenta, prolapse of the uterus) ○ Key indices used to assess the reproductive performance ● Dairy Herd Health Management ○ General principles of disease prevention & control measures in a dairy herd ○ Lameness in dairy cows ○ Signs of illness ○ Monitoring herd health ○ Hoof management ○ Mastitis prevention and treatment ○ Metabolic disease of dairy cattle ● Dairy Cattle records ○ Methods of identification ○ Different record-keeping systems for dairy ○ Breeding records ○ Computerized herd records
5	Glen College of Agriculture		
6	Grootfontein Agricultural Development Institute		

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7	Madzivhandila College of Agriculture	• Dairy production module	Dairy production module outline • Theory ○ Dairy cattle breeds ○ Dairy cattle condition scoring: Between animal interactions ○ Stress management in dairy cattle ○ Stockman and cow interactions ○ Milking procedures ○ Types of Milking Parlour/Management of the milking parlour ○ Dairy cattle feeding ○ Fodder flow planning ○ Dairy management calendar ○ Diseases affecting dairy cattle, mastitis ○ Record keeping • Practical ○ body conditioning scoring ○ selection and culling ○ feeding ○ hoof training ○ artificial insemination ○ pregnancy test ○ mastitis tests ○ calf rearing ○ synchronization of cows
8	Owen Sithole College of Agriculture	• Name of qualification: Diploma in Agriculture (Animal and Crop Production) • NQF level 6 (accredited through the CHE)	• Year 2, Semester 2 – Dairy Production (NQF 6; 8 credits) ○ Focuses on sustainable dairy production management. Topics include dairy cattle and goat breeds, stud registration, functional efficiency, nutrition, reproduction, herd structure, udder anatomy and physiology,

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		No specialized dairy curricula, short courses or dedicated qualifications are offered – dairy production is covered comprehensively both at core and elective levels as part of the Diploma in Agriculture (Animal and Crop Production) qualification	calf/heifer/bull management, milk hygiene and composition, mastitis control, record keeping and dairy enterprise planning Year 3 Electives – Dairy Production (NQF 7; 8 credits) - Provides advanced applied training. Students analyse terrain and facilities, evaluate parlour routines, feeding and management programmes for different classes of dairy animals, herd profiling, financial management, marketing, milk quality and herd health. Emphasis is placed on practical recommendations for improving dairy enterprise efficiency Supporting modules - Animal Nutrition (NQF 6): Includes ration formulation and feeding standards for dairy cows, calves and replacement heifers - Animal Health (NQF 6): Covers veterinary hygiene and disease prevention with specific reference to dairy herd health - Pasture & Cultivated Pasture Science: Includes management of pastures and fodder ruminant systems, relevant to dairy feeding strategies
9	Potchefstroom College of Agriculture Potchefstroom		
10	Taung Agricultural College		
11	Tompi Seleka Agricultural College	Module name: dairy production in the Diploma in	Theory learning outcomes Knowledge of various dairy breeds

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		Agriculture in Animal Production NQF Level 6 accredited by Council on Higher Education	- Knowledge on breeds adaptability environments - Knowledge of anatomy of the udder - Knowledge of physiological processes of milk secretion - Knowledge of effect of nutrition on milk production - Knowledge of disease affecting dairy Practical learning outcomes - Dairy feeding - Breeding - Weaning - Disease control - Milking - Handling of dairy products
12	Tsolo Agriculture and Rural Development Institute Lecturer's name: Mr Y.S Diniso – Dairy Production Scientist yanga.diniso@ecagriculture.gov.za 066 1258 856	- Qualification name: Diploma in Animal Health - Module name: Ruminant and Pseudo Ruminant Animal Production – Dairy Production component, 2025 - Recommended readings: - Meissner, H. H. et al. (2013). Dairy production systems in South Africa. - FAO. (2010). Milk and Dairy Products in Human Nutrition - Radostits, O. M. et al. (2007). Veterinary Medicine: A	Content Outline Unit 1: Overview of the Dairy Industry - Importance of dairy in food security, nutrition and economy - History and development of the dairy industry in SA - Dairy breeds: Holstein, Jersey, Gurnsey, crossbreeds - Dairy value chain: production → processing → marketing - Regulatory and quality assurance bodies (Milk SA, DAFF, SAMPRO, MPO etc.) Unit 2: Dairy Cattle Management

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		Textbook of the Diseases of Cattle, Horses, Sheep, Pigs and Goats ○ Van der Merwe, B. (2019). Dairy Herd Management in Southern Africa ○ Oliver, S. P. et al. (2005). Foodborne Pathogens and Disease: Mastitis Pathogens and Milk Quality ○ SAMPRO (2018). South African Milk Quality Standards ○ FAO (2019). Climate Change and the Dairy Sector ○ Milk SA. (2022). Dairy Industry Sustainability Report	○ Nutrition: pasture-based vs TMR feeding systems ○ Reproductive management: heat detection, AI, calving interval ○ Housing and welfare: free-stall, tie-stall, pasture systems ○ Herd health: preventative medicine, vaccination schedules, biosecurity ● Unit 3: Milk Production and Quality ○ Physiology of lactation and udder anatomy ○ Milking procedures: manual vs machine ○ Mastitis control: prevention and treatment ○ Milk hygiene and safety (antibiotic residues, bacterial contamination) ○ Quality testing: SCC, fat %, protein %, adulteration checks ● Unit 4: Dairy Systems, Technology & Sustainability ○ Dairy production systems, intensive, semi-intensive, extensive ○ Automation and 4IR in dairy: robotic milking, sensors, big data ○ Climate-smart dairy farming: reducing methane, water use efficiency ○ Environmental sustainability: manure management, effluent systems ○ Ethical issues: animal rights vs production efficiency