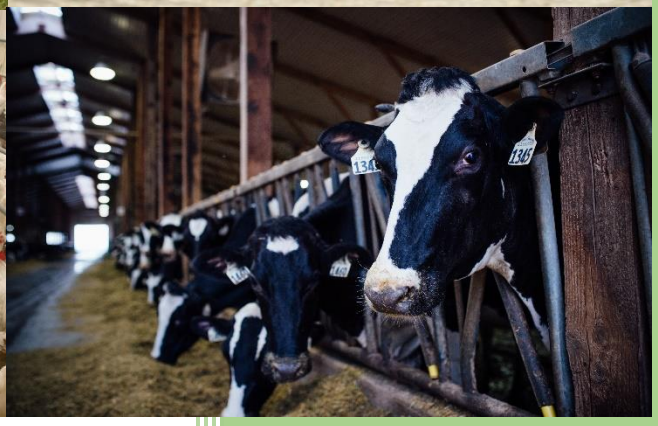
ALBERTA INSTITUTE OF AGROLOGISTS

2020

Livestock Production Practice Standard



Approved by AIA Council

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Preface

This practice standard is part of the continuing effort by the Alberta Institute of Agrologists (AIA) to meet its obligations under the *Agrology Profession Act*. The *Act* specifies that the Institute must establish, maintain and enforce standards of practice as part of the profession's role in protecting the public in matters related to agrology.

This document was created by a Practice Area Expert Committee (PAEC) consisting of six regulated members of the AIA. Members were selected for their expertise and long-standing practice in Livestock Production and for recognition of their expertise within this area.

This practice standard forms the basis upon which practice reviews will be conducted by the AIA to assist members in ensuring that their professional practice meets a standard that outlines the knowledge, work experience, skills and performance required for professionals practicing in Livestock Production.

This document will be reviewed on a periodic basis to ensure it is up to date with current industry standards and state of knowledge for the practice area.

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1. Introduction

This practice standard applies to regulated members of the Alberta Institute of Agrologists (AIA) who practice or intend to practice in the "Livestock Production" practice area (PA). It defines expectations and outlines requirements regarding professional practice within the PA. Documentation of these requirements provides assurance to the public that the Agrology profession has identified the requirements for competent practice and members have a standard upon which to assess their professional practice and identify potential learning needs in their continuing competence program.

This practice standard forms the basis for implementation of a practice review protocol for this PA. Members working within this PA will be able to request a review of their professional practice based on this practice standard. Such a review will provide valuable input for areas of improvement.

1.1 Objectives

The objectives of this practice standard include the following:

- To identify and to define the knowledge requirements (education, experience, skill sets) and performance requirements for professional practice within the PA;
- To provide documentation of the requirements indicated above so that regulated members of AIA may assess their practice against this standard and thereby identify learning needs to ensure they meet the standard;
- To provide a standard against which members' professional practice may be reviewed by a peer review committee to assist them in identifying areas that may need improvement;
- To provide a mechanism whereby AIA can demonstrate to the public that the profession is managed in a manner that protects public interests in matters related to Livestock Production work conducted by regulated members of the AIA.

1.2 Definitions

Competence: The ability to perform certain tasks in one's professional practice based on educational training, skills, and work experience in a manner that meets performance objectives as defined in a practice standard.

Core Knowledge Area: A general area of knowledge consisting of one or more specialized subject matter areas that are required for practice within a PA, for example: "Animal Breeding", "Animal Nutrition", etc.

Performance: The exercise of knowledge in one's professional practice that demonstrates the required ethical conduct and wise judgment as specified within a practice standard.

Practice Area: A unique functional area of professional practice within the agrology profession that requires specialized knowledge, based on education, work experience, and skill sets.

Practice Area Expert Committee: A committee of members who have demonstrated through their professional practice that they have a comprehensive understanding of the requirements for professional practice in a PA.

Practice Review: A process whereby a peer review panel examines a regulated member's professional practice against a practice standard with the intent of providing input on practice improvement.

Practice Standard: A document that outlines the requirements and expectations for professional practice within a PA.

Professional Practice: The competent and ethical provision of specialized knowledge, recommendations and assessments based on one's educational training, work experience, and skill sets while being accountable to one's peers as a regulated member of a professional regulatory organization.

Regulated Member: A member in good standing with the Alberta Institute of Agrologists who holds one of the following designations: P.Ag., RTAg, A.I.T, or A.T.T.

Skill: An ability that has been developed over multiple years of work experience in one's professional practice.

Subject Matter Area: A specialized area of knowledge required for professional practice within a PA, for example: "Animal Physiology", "Animal Anatomy", "Feeds and Feeding", etc.

Experience: Knowledge or practical wisdom gained from what one has observed, encountered, or undergone.

Section 2: Scope of the Practice Area

Agrologists who practice within the *Livestock Production* PA are professionals with specialized education, knowledge, skills, and work experience to ensure sustainable livestock production, management and development. They provide professional advice to producers, government, industry and other organizations on the appropriate management of livestock to produce food, fiber and other value-added products. The sustainability of the livestock production industry is at the forefront of the work these Agrologists perform with focus and leadership on animal performance, health and welfare, environmental stewardship and protection, food quantity and quality, and economic profitability. Livestock Production Agrologists must be knowledgeable of emerging technologies related to genomics, data analytics, remote sensing and smart/precision farming. In order to integrate these innovative technologies into a sustainable production system, Livestock Production Agrologists are continuously upgrading their training and skillsets.

Agrologists within the *Livestock Production* PA work closely with the Veterinary Medicine profession when it comes to animal health and welfare (within the realm of disease and pathology); and, with the Engineering profession with respect to identifying, developing and constructing the infrastructure needs of an animal production enterprise. Livestock Production Agrologists also may confer with Agrologists working within the *Crop Production* and *Rangeland and Pasture Management* PA's to ensure the feed or forage meets the ingredient, nutrition, quality and quantity requirements of the animal. Livestock Production Agrologists similarly may work alongside Agrologists in the *Food Development and Processing* and *Regulatory Support* PA's to address product quality issues, food safety, novel food (meat) development, traceability and import/export standards. In addition, Agrologists within the *Livestock Production* PA may consult with Agrologists working within the *Water Resources Planning and Management* PA, *Land Conservation and Management* PA and the *Biosystems, Biosolids, Compost and Manure Management* PA to ensure land is conserved and water quality and quantity needs are met as well as addressing any environmental quality issues that may arise related to manure and waste management associated with livestock production.

The livestock industry continues to undergo increased scrutiny from the general public and special interest groups opposed to animal agriculture. Agrologists play a key role in educating the public regarding the state of the livestock industry and the practices that have been implemented to ensure animal health and welfare meet societal expectations. All Livestock Production Agrologists are involved in public education to one degree or another. They educate the public or those involved in agriculture either informally through conversations and other interactions or formally by teaching animal science and conducting or managing research within an institutional

setting in Alberta, Canada or internationally. Each year these institutions graduate animal scientists and technologists who become the next generation of livestock production specialists.

Agrologists are at the front line of adapting academic research and finding ways to implement and transfer new technologies to an ever-changing industry. The development of new technologies in the livestock industry is rapidly increasing the technical requirements for Agrologists to assess the benefits and consequences of implementing these technologies. Practitioners within the *Livestock Production* PA participate in a variety of core activities within the PA. These activities include animal health and welfare; nutrition and feeding; genetics and breeding; economics and markets; product quality and safety; regulatory and codes of practice, environmental management and infrastructure development.

2.1 Animal Health and Welfare

Practitioners who work in animal health and welfare strive to ensure animals are treated in an ethical and humane manner through the entire production cycle. Considerations such as pen flooring, corrals and related infrastructure over the animal's life-cycle, animal space and comfort, ambient temperature, light and air quality requirements, biosecurity, disease and pathology, water and food availability, handling and transportation, etc. are at the forefront of their work. Agrologists are aware that animal performance and producer profitability are closely tied to animal health and welfare. Societal expectations strongly influence the sustainability of the livestock industry, as do market considerations and global trends in product demand and export.

2.2 Nutrition and Feeding

Nutrition and feeding within the *Livestock Production* PA involves a complex set of considerations. Practitioners must understand the nutritional requirements and physiology of the animal species as well as be able to optimize diets for water quality and quantity, protein (amino acid levels and ratios), carbohydrates, fibers, fats, minerals, and vitamins. Other things to consider include but are not limited to: the gut and other organs, immunological health at varying stages of the production cycle, the genetic potential of the breed, available feed ingredients and their quality, feeding facility design and constraints, formulation of least/optimal cost diets, feed efficiency and objectives of the producer and processor.

The nature of the feed itself is a major consideration. Ingredient and feed sampling and testing are required to determine feed quality and nutritional suitability. The physical, chemical and biological properties of the diet formulation, how it is to be handled through a feed mill and palatability must be considered. This includes feed processing such as fineness of grind, mixing, pelleting, addition of fats, flavoring and pellet binding agents, and understanding the ideal processing methods for each stage of the animal's production cycle, all of which are species dependent. An understanding of feeding equipment, feed delivery systems and feeding methods is also required.

Feed traceability, feed additives and medications, combinations of medications, medication sequencing, flushing, documentation based on Canadian Food Inspection Agency requirements; and, global harmonization initiatives through Health Canada all add to the complexity of nutrition and feeding within the *Livestock Production* PA.

Practitioners, particularly those working in feed formulation and making feeding recommendations, should have a thorough knowledge of the Feed Regulations (1983), enabled by the Feeds Act (1985), upcoming changes under CFIA's Feed Modernization initiative, as well as relevant procedures under the FeedAssure ® (HACCP) program.

As societal expectations and demands for transparency, food quality and certain niche markets rise, nutritional demands and complexity of feeding the animal must also adapt to meet these needs.

2.3 Genetics and Breeding

Animal performance measures (growth rate, meat quality, egg production, milk production, disease resistance, feed conversion, adaptability and resistance etc.) are closely linked to the genetics of the animal breed. Agrologists working within the *Livestock Production* PA may specialize in genetics and breeding for breed improvement and to facilitate development of desirable traits in production animals. This involves identifying desired traits; developing selection criteria and evaluating offspring through records of performance and breed registries.

Agrologists may work in the realm of genetic testing, genomics and genomic selection such as SNP (Single Nucleotide Polymorphism) testing and analysis to identify genomic variants and genes associated with desired traits. This assists in the identification of commercial stud animals as sources of semen for artificial insemination, which in turn, requires strategies for marketing, attaining certificates for international export and quality control of product. Breeding stock also have specific nutrient and health management needs to ensure that the quality of the animals is maintained and desired traits can be transferred to the offspring. Genomics also assists in identifying which animals should be kept as breeding stock. This is becoming more popular to identify top producing animals by genetic traits and indices (e.g. Expected Progeny Differences (EPD), Estimated Breeding Values (EBV) or genomically enhanced EPDs or EBVs). Genomics also assists in identifying genetic defects, and mate selection to optimize heterosis, fitness and fertility

2.4 Economics and Markets

In an environment where consumers are more informed, there is an increased requirement for understanding markets for animal products. This requires an active market intelligence program that assesses consumer demands in each market. Social license, consumer perspective, niche markets, food traceability and knowledge of trade, markets, and barriers to trade (production and use of non-approved substances) have increased the complexity and dynamics of marketing animal products.

Data collection, economic analysis of livestock production, processing and livestock marketing are also important roles for Agrologists in this PA. They are involved in data analytics, managing production costs and understanding forward pricing for both input and output sides of the animal production cycle.

2.5 Infrastructure Development and Management

Agrologists often work closely with engineers to ensure that facility design and operation effectively meets the needs of the animal production enterprise. Housing (heating, cooling and ventilation), rearing pens, floors, corrals and rooms, aviary (cage free and free range) systems, egg collection systems, milking facilities, feeding and watering facilities, animal handling facilities, biosecurity and transportation systems are all part of the considerations Livestock Production Agrologists must consider when providing input into infrastructure.

Infrastructure is vital to the animal production enterprise as they affect the animals' welfare, production costs and overall output. They may also affect how much the animal eats, when and how much they sleep, animal safety, etc.

2.6 Product Quality and Safety

Food safety and traceability are major considerations for the livestock production industry. Agrologists must make sure that appropriate data is collected, retained and made available for a market that expects transparency from all facets of the production system.

Proper nutrition and animal care are necessary in order to produce the quality of product expected by the consumer which ultimately results in the greatest profitability to the producer. Many

Livestock Production Agrologists work in food processing plants as animal handlers, graders and inspectors etc. to ensure public health and safety and animal welfare.

2.7 Regulatory and Codes of Practice

Many Agrologists are involved in drafting and reviewing legislation as either government ministry employees or as consultants to producer groups responsible for developing Codes of Practice and Beneficial Management Practices for specific animal species. The regulatory environment of the animal industry has increased dramatically in the past decade and Agrologists working in this PA must keep current with the changes in regulatory requirements, codes of practice and best management practices.

Some of the legislation governing the livestock industry in Canada includes the Feed Regulations (1983) enabled by the *Feeds Act (1985)*, which is the standard for feeding livestock. The *Agricultural Operation Practices Act* regulates manure management and requires permits for confined feeding operations and manure storage facilities. The *Meat Inspection Act* governs the requirements around meat quality and inspection. The *Health of Animals Act* addresses diseases and toxic substances that may affect animals or that may be transmitted by animals to persons, while respecting the protection of animals. Livestock Production Agrologists must be aware of legislation and policies that directly and indirectly affect environmental requirements and husbandry practices such as the *Wetland Policy, Environmental Protection and Enhancement Act* (EPEA), and the *Weed Control Act*. In addition, provincial regulations exist for the inspection of processing facilities (e.g. abattoirs).

Each national producer group (e.g. Beef, Dairy, Pork, Poultry etc.), through extensive consultation with all interested industry parties, develop Beneficial Management Practices and Codes of Practice for their animal industry. These documents are regularly reviewed and revised to consider new findings and technologies that advance the management of animals. Agrologists are involved either as regulators, consultants or as members of producer groups in the development of Codes of Practice for specific animal production enterprises.

2.8 Environmental Management

Practitioners who work in environmental management endeavor to create environmentally sustainable livestock production systems. They are aware of the potential impacts livestock production systems may have on environmental quality and work to mitigate those effects. Agrologists working within this activity may be involved in monitoring air or water quality, dust and odor and the effects of the production system on natural ecosystems. They may also work to create nutrient management plans or manure management systems while attempting to increase animal and housing efficiencies and decrease waste products. Environmental management is becoming increasingly important as both the public and government require increased environmental accountability from producers.

2.9 Research and Development

Many Agrologists within the *Livestock Production* PA are involved in R&D in areas such as nutrition, genetics/genomics, food safety, animal behavior, reproductive efficiencies, animal welfare, livestock systems research, tech transfer, and the environment. This ranges from research at academic institutions and the subsequent publication of peer reviewed papers, to research at government and industry research stations, to on farm demonstrations for technology transfer purposes. Advances in livestock production have been a result of R&D through the development of new innovations and technologies.

3. Knowledge Requirements

Knowledge requirements are technical or scientific areas of knowledge that are essential to

professional practice within the PA (Table 1). These requirements consist of core knowledge areas consisting of one or more specialized subject matter areas that are foundational to the PA.

The specification of subject matters within each required core knowledge area provides assurance that members working within the PA have the necessary fundamental knowledge to practice. The subject matters within each core knowledge area represent specific scientific or technical knowledge relevant to the PA activities. Subject matter knowledge is usually obtained through educational training in a degree or diploma program; however, subject matter knowledge may also be attained via work experience, self-study or non-adjudicated industry courses (i.e., short courses). To assure the public that practitioners have indeed acquired knowledge outside of an educational degree or diploma program, such knowledge needs to be validated through a challenge exam process implemented by the AIA.

It is the responsibility of members to review Table 1, conduct self-assessments and identify how their knowledge and expertise aligns with the required subject matters. Members who do not meet a required subject matter within a core knowledge area related to their professional practice are required to address the deficiency before practicing unsupervised in relation to that core knowledge area. Members are expected to work toward updating their knowledge where they are lacking specific subject matters for the activities related to their practice. ***Where regulated members do not meet a knowledge requirement for a subject matter, they are required to address the deficiency in one of the following ways:***

1. Seek Advice and Direction: Members lacking specific knowledge in required subject matters must recognize the limits of their expertise and seek advice and direction from a qualified professional;
2. Complete Challenge Exam(s): To validate that subject matter knowledge has been gained through work experience, self-study or non-adjudicated industry courses, a member may choose to either (i) write a professional practice examination supplied by the AIA; or, (ii) to appear before a panel of peers to complete an oral examination supplied by the AIA, or
3. Pursue Formal Education and Training: Obtain credit in a formal course from an appropriate educational institution or from an industry course approved by the AIA. Such courses must have an adjudicated examination to document knowledge attained.

3.1 Core Knowledge Areas

Several core knowledge areas have been identified as being foundational to practice within the PA (Table 1). These include core knowledge in animal husbandry; nutrition; breeding; disease and pathology; infrastructure; environment; economics; and, research and development. Each core knowledge area consists of several subject matter areas which identify specific scientific or technical disciplines. For example, the core knowledge area of “nutrition” requires, at a minimum, knowledge within animal nutrition; animal physiology/anatomy; and, feeds and feeding.

Subject matter areas consist of both required subject matters and recommended subject matters. Required subject matters represent the minimum credible knowledge required for the given core knowledge area and are mandatory for members who wish to provide professional advice or services related to the core knowledge area.

Recommended subject matters represent knowledge that is not mandatory but provide increased depth of knowledge related to the core knowledge area. These subject matters are highly recommended and have been identified to provide direction to members for their continuing competence program.

3.1.1 Animal Husbandry

Animal husbandry is controlled management, and production of domestic animals, including improvement of the qualities considered desirable by humans by means of breeding. Animals are bred and raised for utility (e.g., food, fur), sport, pleasure, research and the ability to maintain the health of rangelands and resilience of food production systems. The subject covers a wide range of activities, including care and grooming, livestock farming, housing and hygiene.

3.1.2 Nutrition

Feeding domestic animals comprises one of the largest costs of production for livestock producers. Therefore, the proper balancing of diets, based on the animal's gender, age, stage of production and production levels is critical not only for the well-being of the animal but also the financial success of the farming operation.

General knowledge of specific animal requirements as well as available ingredients and corresponding nutrient content are critical components that require balancing in the development of diets for companion and food producing animals.

3.1.3 Breeding

Sustainable and efficient livestock production requires animals that are adapted to their environment, are feed efficient, are resistant to disease, have desirable carcass/meat, milk, and egg quality traits and have fertility traits and attributes that result in long-term reproductive success. Animal breeding requires knowledge of animal physiology, nutrition, reproduction, environmental sciences, and animal genetics and genomics to develop sustainable production systems.

Reproduction is a function of animal physiology, whether by natural service or artificial insemination. Knowledge of the optimum environmental conditions and protocols for animal breeding, selection techniques and mating procedures is required to ensure optimum conception rates. High rates of productivity are best suited to profitability in the herd or flock.

A knowledge of genetics, and now genomics, gives the scientific basis for breeding the best-to-the-best. Genetic evaluation programs based on Best Linear Unbiased Prediction programs for phenotypic traits, in conjunction with SNP (Single Nucleotide Polymorphism) analysis for genomic traits, will give the most data for making good decisions in selecting and breeding together of the most suited animals for higher productivity and performance.

Enhanced performance traits of prolificacy, longevity, growth rate, egg numbers, feed conversion efficiency, carcass quality, and meat, milk, and egg quality are related to producer profitability and customer satisfaction. Performance trait improvements in higher milk and egg output, fleece weight/fiber quality, animal disease resistance as well as measures in equine performance are made better through genetic evaluations for those traits.

3.1.4 Disease and Pathology

Knowledge of disease pathology is key for individuals working in the *Livestock Production* PA. The diagnosis and treatment of disease will lie in the hands of veterinary practitioners, however, understanding diseases, their transmission, vaccination and treatment methodologies and the impact they have on animal husbandry; animal welfare; nutrition and economics is essential. The ability to track and understand disease patterns and prevalence forms the basis for surveillance programs that guide policy development and practices to mitigate the effects of a disease outbreak. Agrologists must have a thorough knowledge of biosecurity protocols.

3.1.5 Infrastructure

An understanding of housing systems, animal welfare, barn ventilation and heating, feed delivery, transportation methods and water supply are key elements to livestock production. Professionals must be competent in determining the appropriate environment required for the animals and predicting and monitoring the environmental outcome as a result. Rapid changes in technology and regulatory requirements require members to stay current in their practice area.

3.1.6 Environment

Livestock Production Agrologists are required to balance optimal production with environmental management. This requires Agrologists in this practice area to be knowledgeable of the potential impacts to soil, water and/or air quality. An understanding of environmental science and becoming aware of key mitigating factors such as waste and nutrient management programs are vital to creating sustainable livestock production practices.

3.1.7 Economics

Understanding the economic impacts of management practices is an important component of the *Livestock Production* PA. Economics is an important factor in guiding best practices and management decisions. Analyzing costs and returns, reading financial statements and estimating future pricing of commodities are tools which may help producers be profitable. Practitioners require an understanding of the economic outlook for the industry they work in to ensure their recommendations are responding to market expectations.

3.1.8 Research and Development

Advances in livestock production have been a result of research and development and new technologies and innovations, particularly in areas such as forage agronomy, nutrition and feed utilization efficiencies, grassland management and improvement, and genomics and biometrics. Research in livestock production may be pure research or applied research. Participation by researchers may be direct or indirect. Given the complexity of livestock production and management, a livestock systems approach to developing and implementing research strategies may be essential for professionals in research and development.

Research and development activities include project development, planning, implementation/research, data analysis and reporting. The research process begins with the careful identification of the challenges and opportunities. An interdisciplinary team effort, combining efforts of socio-economic and biological scientists, are encouraged to ensure that the full benefits are realized from the research to the development stage. Researchers may work in collaboration with a diverse group of researchers and technicians. They will have a good working knowledge of experimental design and setup, care of experiments, and data collection, statistical analysis and/or report writing. Ability to share results of findings through extension activities such as workshops, seminars and field days, or scientific presentations are key responsibilities of professionals in research and development.

Table 1. Core knowledge areas, required subject matter areas and recommended subject matter areas for the Livestock Production PA

Core Knowledge Area	Required Subject Matter Areas	Recommended Subject Matter Areas
Animal Husbandry	• Introductory Animal Science	• Biochemistry

	• Species-Specific Production (i.e. poultry production, beef production etc.)* • Animal Health and Welfare	• Crop Production Systems • Rangeland or Pasture Management • Animal Anatomy • Animal Physiology
Nutrition	• Introductory Animal Nutrition • Introductory Animal Physiology and Anatomy • Feeds and Feeding	• Feeding Logistics/Infrastructure • Advanced Nutrition • Animal Health and Welfare • Biochemistry
Breeding	• Introductory Genetics • Advanced Genetics/Genomics • Reproductive Physiology • Introductory Animal Nutrition	• Data Analytics • Record Keeping • Artificial Insemination • Embryo Transfer (ET) and In Vitro Fertilization (IVF)
Disease and Pathology	• Animal Diseases • Animal Health and Welfare	• Animal Medications and Treatment • Zoonotics • Biosecurity Protocols • Health Protocols • Parasitology • Immunology • Food Safety
Infrastructure	• Animal Health and Welfare • Animal Housing	• Animal Handling and Transportation • Feeding Logistics/Infrastructure • Water Supply and Quality
Environment	• Environmental Science • Introductory Soils • Introductory Hydrology	• Soil Chemistry • Soil Fertility • Watershed Management • Manure Management • Range Management • Air Quality
Economics	• Introductory Agricultural Economics • Animal and Animal Products Marketing • Micro and Macro Economics	• Farm Business Management • Accounting/Finance • Marketing and Sales • Animal Traceability

Research and Development	• Statistics • Experimental Design	• Technology Transfer • Commercialization of new products
* *"Species-specific production" knowledge must be for the animal species that is the focus of the member's professional practice.*		

4. Work Experience

Work experience represents a source of knowledge that is gained through professional practice rather than through education. Such experience facilitates development of skill sets and attaining of knowledge needed to be competent within one's practice. Development of these skill sets and acquisition of knowledge takes time working in an environment where feedback is available to hone one's skills and acquire experiential knowledge.

Three levels of work experience are recognized within the Practice Standard. These include:

a) Junior Level (0 to < 3 years) – The junior level of experience coincides with entry level personnel who have recently graduated from an appropriate educational program or have recently begun offering professional services in the PA. This work experience is conducted under supervision by qualified practitioners within the PA. Practitioners at the junior level are considered to have limited experience to provide wholly unsupervised professional services.

b) Intermediate level (3 to < 10 years) – The intermediate practitioner may no longer require direct supervision and has developed skills and obtained the necessary experiential knowledge to take responsibility for their work. Intermediate practitioners may act as mentors for junior personnel and seek mentoring from senior level personnel.

c) Senior level (≥ 10 years) – Senior level practitioners generally provide supervision to intermediate and junior personnel. They have sufficient supervisory experience to ultimately take responsibility for work conducted by junior and intermediate practitioners under their supervision. They are often recognized as knowledge experts by their clients and peers and are often sought after for advice, mentorship and counsel.

Members will ensure they have sufficient work experience to conduct the work they do. The time frames indicated above are provided for guidance. Career progression and work experience may vary by individual. Duties and responsibilities, representing a continuum of career progression as a professional gains experience within the Livestock Production PA, are described in Table 2.

Table 2. Typical years of work experience and examples of job duties and responsibilities.

Level of Experience	Examples of Typical Job Duties	Key Responsibilities
Junior (typically < 3 years)	• Data collection and compilation • Feed and forage sampling • Monitoring animal performance • Applying nutrition and feeding programs	• Self-development and demonstration of initiative and ability to work independently • Being flexible to and in different work environments

	• Basic feed formulation under supervision • Environmental monitoring of facilities • Job shadowing of intermediate and/or senior personnel • Preliminary data analysis and interpretation • Learning nature of the business • Supervised recommendations (e.g. feed and nutrition; environmental, etc.) • Developing network and contacts • Attending industry meetings • Professional development	• Being part of team environment • Recognizing the limits of one's knowledge and seek to advance one's knowledge. • Taking responsibility for one's job duties and overall work performance
Intermediate (typically 3 to < 10 years)	• Data analysis, interpretation, making recommendations and reporting • Diet formulation • Applying animal improvement programs • Identify business improvements • Supervise and mentor junior personnel • Develop business plans, recommendation plans • Progressive development of business clients • Prepare and present technical presentations • Conduct sales and/or marketing presentations • Professional development	• Provide guidance and training to junior personnel • Analyze and recognize industry trends • Manage clients • Identify risk and manage accordingly
Senior (typically ≥ 10 years)	• Developing and overseeing implementation of animal improvement programs (e.g. nutrition, live animal production, etc.)	• Provide guidance and training to junior and intermediate personnel • Administrative and technical supervision of personnel

	• Prepare and present technical presentations • Exercise leadership role in industry • Provide leadership in innovation and new business opportunities • Understand and manage risks to industry • Provide policy and program advice • Strategic planning • Provide a trusted and reputable source of technical and operational expertise • Reporting • Professional role model • Professional development	• Coordinate with senior management regarding business strategies, etc. • Client business development and management

4.1 Skill Sets

Certain skill sets and capabilities enhance competency within a given PA. Application of scientific or technical knowledge requires skill sets which have been identified under this practice standard (Table 3). Skill sets are tied to effective functioning within the PA and are usually developed during work experience.

Members practicing in this PA are required to evaluate their skills and capabilities against the information in Table 3, and if deficiencies are identified, should target their individual continuing competence programs to address those deficiencies.

Table 3. Skill sets useful for practice within the PA

Skill Sets	Description
Understanding and applying legislation, regulations, policies, standards, guidelines, best management practices, codes of practice	It is important for practitioners to stay current with legislation, policies and standards relevant to the PA. Practitioners must ensure clients are informed of standards and regulations that (may/do) impact their operations presently and in the future. In addition, practitioners take an active role to help guide and formulate policy change(s). A knowledge of regulatory requirements is necessary to ensure that operations are aligned with different pieces of legislation and production requirements. In the absence of legislation, practitioners rely heavily upon best management practices and specific production guidelines. Sound knowledge of these requirements is necessary to ensure that animals are produced

	in a responsible way, while maintaining the integrity of the food chain for human consumption. For example, live animals, semen, feed and meat products, etc. have specific-country regulations that must be met before these can be exported.
Communications and problem solving	Communication and problem solving are vital skills for the practitioner working in this PA. Communication needs to be at a level understood by those with concerns (layman's terms) to ensure recommendations can be understood and followed. Problem solving is necessary to ensure all avenues of possible causes have been evaluated to ensure conclusions are valid. This skill set involves record keeping; critical information evaluation/interpretation and analysis; integration of knowledge gained with client's specific situation in formulating response(s); understanding that options, as opposed to one answer only, may be required (not always black/white but trade-offs need be considered). Effective communication is important for capturing the value of a member's service offering.
Extension and technology transfer	This skill set involves keeping current with research, new products and trends in the PA; providing relevant research information to aid one's clients in their operations; evaluating new products and technologies; formulating messaging to clients to enhance their operations; and, engaging in opportunities that lead to increased effectiveness in communication skills.
Data collection and management, quality control	Recommendations and advice depend on quality data and the ability to access and correctly interpret the data. Repeatability is also crucially important to product evaluation. To ensure consistency, and when doing comparisons, the data need to be collected according to set protocols. Practitioners recognize the benefit of organizational skills and record keeping management; they subscribe to the practice of quality control management and best practices; and, they ensure records and files are backed-up, decipherable to others and enduring.
Synthesize, analyze and interpret field and laboratory data	The abilities to synthesize, analyze and interpret field and laboratory data are essential to developing sound recommendations. Practitioners work to hone and enhance their data interpretation skills and their ability to focus on pertinent data extension. In addition, practitioners recognize testing methodologies used and potential strengths or weakness in such testing methods. They interact with their data source to gain understanding of reports/data collected and how the data were generated and reconcile their interpretation with the report source and formulate messaging for ease of extension to client

Understanding production equipment and facilities capabilities and limitations	Capabilities and limitations of production equipment and facilities must be understood. Basic knowledge is necessary to understand how production equipment and supplies are needed and used. Practitioners engage in field days and trade shows that present/provide learning opportunities related to production equipment and facilities. It is important for the practitioner be aware and conversant in a client's operating equipment and facilities. Practitioners may provide "change information" and suggestions to a client as needed in the operation. In addition, practitioners must remain current with changes in equipment, facilities and technology and how these may present new opportunities within the client's operations.
Documentation	Practitioners must understand client needs and understanding of data and then generate a recommendation based on the level of need and understanding. Practitioners should strive to develop a system to track recommendations that are made, especially when no monetary exchange takes place. In the event of a complaint, the onus is on the practitioner to document and provide supporting evidence for the recommendation.
Product recommendations	Making product recommendations is a key part of professional practice within the PA. Practitioners must be aware and knowledgeable of new products in the market place, and testing of new products; develop network of contacts within industry that provide a conduit to new information and products; understand limitations and fit of new products within a client's operation; be conversant in recommendations of use for any products discussed or suggested; and, understand liability/warranty of use and the responsibility that is bestowed upon the professional. In addition, practitioners must be familiar with and be able to use a variety of technology driven decision making tools.
Ethical practice	Members adhere to the Code of Ethics for the profession as they make recommendations to their clients. The Code of Ethics states, "*The Profession of Agrology demands integrity, competence and objectivity in the conduct of its members while fulfilling their professional responsibilities to the public, the employer or client, the profession and other members*." (See Appendix B)

5. Performance Requirements

In addition to the General Practice Standard that applies to all AIA members (see Appendix A), specific performance requirements have been developed for this PA. This practice standard identifies knowledge, work experience and skill set requirements for competent practice and defines the performance expected of regulated members participating in the practice area.

The following performance requirements outline the expectations of the professional practicing within the *Livestock Production* PA. Failure to comply with these expectations may be considered as constituting unprofessional conduct under the Agrology Profession Act.

Regulated members stay current with research, legislation, directives, guidelines, industry standards and other reference documentation related to Livestock Production.

Regulated members:

- Regularly review the reference material used to support their practice and obtain most current versions when available.
- Attend and provide presentations at conferences, workshops and updates, field days, trade shows and tours related to Livestock Production.
- Communicate with regulators, research scientists, educators and other practitioners to ensure they remain current with current Livestock Production knowledge and trends.

Regulated members understand the limits of their knowledge, skills and experience and seek the expertise of other professionals where necessary.

Regulated members:

- Make appropriate scientific, technical, practical and logistical decisions based on their education and experiential knowledge in Livestock Production.
- Apply their skills and use sound judgement in an ethical manner.
- Seek advice and input from other professionals when their expertise is insufficient to make competent decisions and recommendations.

Regulated members clearly understand their role within the practice area.

Regulated members:

- Understand their role in Livestock Production work and do not exceed the boundaries of that role.
- Do not conduct Livestock Production work that is beyond their expertise and work experience level unless under the direct supervision of a qualified regulated professional.
- Sign and seal only those plans, reports, and other documents for which the members are professionally responsible and which were prepared by or under the direction of the member.

Regulated members clearly understand the economic, environmental and social impacts of their recommendations to clients.

Regulated members

- Understand the economic impact of their recommendations to their client(s) aiming to leave a client in a better financial, environmental and social position than before the recommendation was made.

- Seek to validate all Livestock Production product information. In the absence of Government regulations for product efficacy, members look to peer reviewed publications and applied research organizations.
- Ensure product recommendations fall within industry accepted guidelines based on species (e.g. Canadian Pork Council; Canadian Food Inspection Agency, Canadian Dairy Council, etc).

Regulated members strive for continuous improvement.

Regulated members:

- Seek advice from other professionals to enhance their knowledge of Livestock Production practices.
- Participate in knowledge sharing with other members to advance professional practice in Livestock Production.
- Document best management practices in Livestock Production and implement these practices where feasible.
- Focus their CCP activities to improve their practice, through identification of deficiencies and/or new knowledge areas wanted to be gained.

Regulated members review the requirements of this practice standard and address any practice deficiencies through their ongoing continuing competence program.

Regulated members:

- Conduct self-assessments based on education, work experience, skill set, and performance requirements indicated within this practice standard.
- Review their self-assessment with a senior qualified professional.
- Identify any deficiencies and develop a plan to address them.
- Participate in the AIA continuing competence program as required by the *Agrology Profession Act*.
- Discuss this practice standard with their fellow colleagues working within the practice area.
- Provide feedback and/or suggestions to the AIA regarding this Practice Standard.

6. Suggested Reference Material

The following is a list of some recommended reading material relevant to the *Livestock Production* PA in Alberta. It is not intended to be an exhaustive list.

Websites:

Agricultural Operation Practices Act Reference Guide
https://open.alberta.ca/publications/4221828

Alberta Agriculture and Forestry
https://www.alberta.ca/agriculture.aspx

Alberta Agriculture and Forestry Agricultural Air Quality
https://www.alberta.ca/livestock-and-air-quality.aspx

Alberta Agriculture and Forestry Biodiversity Guide
https://www.alberta.ca/biodiversity-guide.aspx

Alberta Agriculture and Forestry Livestock
https://www.alberta.ca/livestock.aspx

Alberta Beef
https://www.albertabeef.org/

Alberta Chicken Producers
https://www.chicken.ab.ca/

Alberta Environmental Farm Plans
http://www.albertaefp.com/

Alberta Farm Animal Care
https://www.afac.ab.ca/

Alberta Lamb Producers
https://ablamb.ca/

Alberta Milk
https://albertamilk.com/

Alberta Pork Producers
https://www.albertapork.com/

Alberta Turkey
https://ab.canadianturkey.ca/

Agricultural Operations Practices Act
https://open.alberta.ca/publications/a07

Animal Nutrition Association of Canada
https://www.anacan.org/

Beef Cattle Research Council
https://www.beefresearch.ca/

Biodiversity Risk Map
https://www.alberta.ca/biodiversity-risk.aspx

Canadian Cattle Identification Agency
https://www.canadaid.ca/

Canadian Cattlemen's Association
http://www.cattle.ca/

Canadian Hog Journal
https://canadianhogjournal.com/

Canadian Journal of Animal Science
https://www.nrcresearchpress.com/journal/cjas

Compendium of Medicating Ingredient Brochures, CFIA

https://inspection.gc.ca/animals/feeds/medicating-ingredients/eng/1300212600464/1320602461227

Egg Farmers of Alberta
https://eggs.ab.ca/

Environmental Protection and Enhancement Act (EPEA)
http://www.qp.alberta.ca/documents/Acts/E12.pdf

FeedAssure® Program
https://www.anacan.org/anac/feedassure/index.html

Feeds Act
https://laws-lois.justice.gc.ca/eng/acts/F-9/

Feed Modernization
https://inspection.gc.ca/about-the-cfia/acts-and-regulations/forward-regulatory-plan/2019-to-2021/feed-modernization-/eng/1489701932456/1489701933118

Feed Regulations
https://laws-lois.justice.gc.ca/eng/regulations/SOR-83-593/index.html

Feedstuff
https://www.feedstuffs.com/

Fish and Wildlife Mapping Tool
https://www.alberta.ca/fisheries-and-wildlife-management-information-system-overview.aspx

Health of Animals Act
https://laws-lois.justice.gc.ca/eng/acts/H-3.3/

INRA-CIRAD-AFZ Feed Tables
https://www.feedtables.com/

Journal of Animal Science
https://academic.oup.com/jas

Journal of Dairy Science
https://www.journalofdairyscience.org/

Journal of Poultry Science
https://academic.oup.com/ps

Journal of Meat Science
https://www.sciencedirect.com/journal/meat-science

Livestock Feeds, CFIA
https://inspection.gc.ca/animals/feeds/eng/1299157225486/1320536661238

Manure and Nutrient Management, Government of Alberta
https://www.alberta.ca/manure-and-nutrient-management.aspx

Meat Inspection Act
https://laws-lois.justice.gc.ca/eng/acts/M-3.2/page-1.html

National Farm Animal Care Council Codes of Practice
https://www.nfacc.ca/codes-of-practice

National Hog Farmer Daily
https://www.nationalhogfarmer.com/

enews@.nationalhogfarmer.com

National Research Council – Nutritional Requirements Guides: Swine, Dairy, Beef, Poultry, Equine, Sheep and Goats
https://www.nap.edu/

NRCB 2008 Reference Guide
https://open.alberta.ca/dataset/77240ca8-a51d-4f5a-a162-ab3779294456/resource/70eb491e-a42f-4f6c-b152-3d2199b93aff/download/2014-referenceguide-may2014.pdf

Pork Daily
aginfo@farmjournal.com

Poultry Health Research Network
http://phrn.net/resources/publications/

Prairie Swine Centre
https://www.prairieswine.com/

proAction®
https://www.dairyfarmers.ca/proaction/

Range Health Assessment Guides
https://www.alberta.ca/range-health.aspx?utm_source=redirector

Western Hog Exchange
https://www.westernhogexchange.com/

Wetland Policy
https://www.alberta.ca/alberta-wetland-policy.aspx

Verified Beef Production Plus
http://verifiedbeefproductionplus.ca/

Other:

Aasen, A., & Bjorge, M. (2009). Alberta Forage Manual. 2nd Edition. Alberta Agriculture & Forestry, Edmonton, Alberta.

Alberta Agriculture and Food. (2008). The Beef Cow- Calf Manual. Alberta Agriculture. Agdex 420/10.

Brazilian Tables for Poultry and Swine (: feedstuff composition and nutritional requirements)/ Editior: Horacio Santiago Rostagno; Authors: Horacio Santiago Rostagno… (et al.); Translated by Bettina Gertum Becker 4. Th. – Vicosa: Department of Animal Science, UFV, 2017.

National Academies of Sciences, Engineering, and Medicine. 2016. Nutrient Requirements of Beef Cattle: Eighth Revised Edition. Washington, DC: The National Academies Press. https://doi.org/10.17226/19014.

National Research Council. 1994. Nutrient Requirements of Poultry: Ninth Revised Edition, 1994. Washington, DC: The National Academies Press. https://doi.org/10.17226/2114.

National Research Council. 2000. Nutrient Requirements of Beef Cattle: Seventh Revised Edition: Update 2000. Washington, DC: The National Academies Press. https://doi.org/10.17226/9791.

National Research Council. 2001. Nutrient Requirements of Dairy Cattle: Seventh Revised Edition, 2001. Washington, DC: The National Academies Press. https://doi.org/10.17226/9825.

National Research Council. 2007. Nutrient Requirements of Horses: Sixth Revised Edition. Washington, DC: The National Academies Press. https://doi.org/10.17226/11653.

National Research Council. 2007. Nutrient Requirements of Small Ruminants: Sheep, Goats, Cervids, and New World Camelids. Washington, DC: The National Academies Press. https://doi.org/10.17226/11654.

National Research Council. 2012. Nutrient Requirements of Swine: Eleventh Revised Edition. Washington, DC: The National Academies Press. https://doi.org/10.17226/13298.

Yang, R. C. (2002). Understanding design and analysis of research experiments—Experimental designs. Retrieved May, 26, 2005.

7. Summary

This document describes the educational requirements, work experience, skill set and performance expectations for professional practice within the *Livestock Production* practice area of the Agrology profession. It provides direction to practitioners of the Alberta Institute of Agrologists who are practicing or who wish to work within this practice area to ensure they are qualified to conduct work in this area.

Registrants practicing within this practice area are required to review this document and assess their knowledge, work experience, skill sets and performance against the requirements and expectations herein. Where deficiencies are noted, practitioners are expected to develop a plan to address these deficiencies through their individual continuing competence programs. Registrants are expected to understand the limits of their own knowledge and expertise and seek additional advice and professional support as required.

This practice standard will form the basis of ongoing practice reviews conducted by the Institute and the basis for review should a member be subject to a complaint. It is the responsibility of the member to be aware of the contents of this practice standard.

APPENDIX A

The following General Practice Standard applies to all registered members of the AIA. This General Practice Standard is to be adhered to as well as this detailed practice standard for the *Livestock Production* practice area.

GENERAL PRACTICE STANDARD FOR ALL REGISTERED MEMBERS OF THE ALBERTA INSTITUTE OF AGROLOGISTS

The General Practice Standard applies to all registered members of the Alberta Institute of Agrologists. The purpose of the document is to describe the duties and responsibilities that are incumbent upon each member of the profession. It is the responsibility of each registered member to conduct themselves in accordance with these standards. Registered members will be measured against these standards by the Institute, the public, employers, clients and colleagues. The Standard describes the values of the Institute and the profession, and the expectation for each registered member.

PROFESSIONAL RESPONSIBILITY

Each registered member of the Alberta Institute of Agrologists (AIA) is required to uphold the standards and reputation of the agrology profession and professional principles.

Indicators

The registered member has a duty to protect the public and to conduct his or her work with an appropriate standard of care.

Standard of care: Standard of care is the legal duty to exercise the watchfulness, attention, caution and prudence that a reasonable professional in the same circumstances would exercise. If a professional's actions do not meet this standard the professional may be found negligent or to have committed unprofessional conduct.
The registered member is personally responsible and accountable for ensuring that his or her agrology practice and conduct meet the requirements of the practice area(s), practice standards, current legislation, regulations and policy.

The registered member will practice with honesty, integrity and respect, and comply with the AIA's Code of Ethics.

The registered member will sign or co-sign a report only if he or she is willing to accept full responsibility for the contents of the report.

The registered member may delegate portions of the work to competent practitioners under the registered member's direct supervision. The registered member will accept responsibility for that work and provide additional quality assurance/quality control to determine the sufficiency of that work. Registered members will not sign any document for which they will not take full responsibility for the contents of the document.

The registered member will hold the public interest paramount and endeavor to put service above gain and excellence above quantity.

COMPETENCY

The registered member will practice only in an area(s) where the member has demonstrated competence.

Indicators

The registered member will only practice unsupervised in the practice area(s) where the member's education, skills, and experience fulfill the practice area qualifications and the registered member believes he or she is competent. If a registered member's education, skills, and experience do not meet the requirements of the practice area, the member will practice *only* under the direct supervision of a qualified, registered professional who is competent to do the work and who will give appropriate direction to the registered member.

The registered member, if called upon by the profession, a judicial review or a court ordered request, must be able to clearly demonstrate the knowledge and skill sets gained to enable them to practice in any practice area(s) in which the member deems himself or herself competent to practice.

The registered member will undertake continuing professional development (CPD) with the majority of the CPD hours directly relevant to his or her practice area(s). The registered member commits to reporting his or her CPD activities on the member profile as activities are completed.

The registered member will continually update his or her scientific and standard industry practice knowledge related to the member's practice area(s).

The registered member will demonstrate critical thinking when planning, implementing and evaluating all aspects of the work and making any recommendations as a professional.

The registered member is able to show his or her reasoning in reaching decisions through accurate and clearly written documentation.

The registered member will advise the AIA of any changes to his or her practice area(s), particularly when a new practice area is chosen. The registered member will specify the knowledge and skills that have been acquired to support work in the new practice area.

PROVISION OF SERVICE TO THE PUBLIC, A CLIENT OR AN EMPLOYER

The registered member will promote the qualified, competent and ethical professional role and accountability of agrologists to the public, other professionals, and themselves.

Indicators

The registered member will prepare accurate, concise and clearly written reports and correspondence that are appropriate for the intended audience.

The registered member will communicate clearly and respectfully with a variety of people, including his or her employer, colleagues, clients, members of the public and regulators.

The registered member will advise the client if the work is outside of his or her practice area(s) and if the member will be unable to fulfil the terms of reference for the work.

The registered member will make a referral to seek advice, and enter into collaborations with other professionals in situations which require expertise that extend beyond the member's competence.

The registered member will avoid situations where a conflict of interest exists or where the duties and loyalty owed by a member to one party likely will be, is, has been, or perceived to be, in conflict with the duties or loyalties the member owes to another party.

The registered member will extend public knowledge of their area of expertise whether it is in agriculture, the environment, food sciences or life sciences, and promote factual and accurate statements on matters regarding these areas.

STEWARDSHIP

The registered member will advocate and practice good stewardship of all agricultural and environmental resources based on sound scientific principles.

Indicators

A registered member will consider monetary issues, social values, rational application of sound science, lesson of valid experiences, economic impacts to the geographic region, and impacts on future generations when conducting his or her work.

A registered member will inform the client or employer of any action planned or undertaken by the client or employer that he or she believes is detrimental to good stewardship or in breach of known legislation, regulations or policies.

SAFETY

The registered member understands his or her obligation for promoting public and worker safety and considers the health of the environment, health of the consumer, industrial safety, construction safety and the general operational safety of projects.

Indicators

A registered member will demonstrate concern for the immediate and long-term direct effects of agricultural and environmental practices on the safety of workers by being aware of, and evaluating risks.

A registered member will balance the claims of producers and needs and wants of a consuming public against the potentially competing claims for safety of the environment and the interests of individuals and businesses affected by their proximity to agricultural operations. The registered member is aware that the public expects and demands a safe supply of food, not only for current use but also for future generations.

APPENDIX B

CODE OF ETHICS

"The Profession of Agrology demands integrity, competence and objectivity in the conduct of its members while fulfilling their professional responsibilities to the public, the employer or client, the profession and other members."

Members should be aware of any other laws and responsibilities in regard to other business and voluntary activities which may impact their ethical conduct.

Guidelines to the Ethical Responsibilities of Agrologists

The purpose of the following guideline is to clarify the intent of the Code of Ethics and the understanding of the nature of the professional obligations that arise out of the document. Throughout, it is recognized that membership is a right granted by the public to the regulated member (member) to practice Agrology in such a way that the public interest is served. It is also understood that, just as the individual member has an obligation to conduct business in an ethical and competent manner, colleagues and the Institute share the moral responsibility of protecting their Agrologists and the field of agrology against any unfounded and unjust criticisms.

1) Among the regulated member's professional obligations to the public are the responsibilities:

a) To practice only in those practice areas where the member's training, ability, and experience make him/her professionally qualified.

The public has given a right to the Professional with the trust and expectation that those activities are undertaken with competence. A member will not make misleading statements regarding his/her qualifications. A member will actively pursue professional knowledge upgrading specific to their practice area(s) in order to remain competent in his/her field of expertise. A member will make referrals to seek advice, and enter into collaborations with other professionals in situations which require expertise that extend beyond the individual member's competence.

b) To express a professional opinion only when it is founded on adequate knowledge and experience, and where the member has an understanding of the situation and context in which this opinion is being offered.

Members must clearly distinguish among facts, assumptions and opinions in their preparation of reports and professional statements. Professional opinions should be clearly stated and should include clear indications of the constraints that apply to the opinion, and the relevant qualifying circumstances, facts and assumptions.

Members should exercise care that work they conduct cannot in any way be seen to support or make possible any morally suspect or illegal purposes. In the extreme, this caution might cause a member to refrain from association with enterprises or individuals whose objectives and probity are subject to questions.

Members who act as expert witnesses and provide opinion evidence for the purpose of litigation should not take a partisan position. Agrologists must provide evidence as impartial experts and must not do so as advocates of their client or employer. While acting as an expert witness, a member's role is to assist the judge/jury/panel with technical matters which are beyond the expertise of the tribunal.

c) To advocate and practice good stewardship of all agricultural and environmental resources based on sound scientific principles(s).

Stewardship requires making complex choices based on a variety of relevant but not necessarily compatible factors. Good stewards must consider, but not necessarily be limited to: monetary matters, social values, the rational application of sound science, the lessons of valid experience, impacts on the economic health of the community at large, and the impacts on future generations. Because of the position of public trust, a member's duty is to uphold professional principles above and beyond the demands of employment.

Conflict may arise between a member's duty to uphold professional principles and the duty to serve the needs of an employer or a client. Members must distinguish between the role they play as Agrologists and the role management plays. Managers have prerogatives and privilege for making decisions based on a wider range of constraints than those that might be appropriate for an Agrologist. The member must not confuse the role of providing others with information upon which to base a decision with the role of being responsible for making the decision him or herself.

If a member believes there is a serious conflict between the requirements of employment and a member's professional principles, a member should inform/or consult the Registrar or any other appropriate persons about the conflict. Members may seek advice and support for the position from the Institute.

d) To extend public knowledge of agriculture and the environment and to promote truthful and accurate statements on sustainable agricultural systems and environmental matters.

Members should strive to develop appropriate involvement with schools, agencies and organizations insofar as such outreach activities can help ensure the dissemination and discovery of sound and appropriate agricultural environment knowledge. Members should attempt to correct misleading or erroneous statements on agricultural matters whenever and wherever such statements are encountered.

e) To have proper regard for the safety of others in all work.

Members must understand their obligation for promoting safety. Members should consider the impact the exercise of their professional duties will have upon the health of the environment, industrial safety, and health of the consumer, construction safety and the general operational safety of completed projects. Members must demonstrate concern for the immediate and long-term direct effects of agricultural and environmental practices on the safety of workers by being aware of and evaluating risks.

The public expects and demands a safe supply of food, not only for current but also for future generations. Members must balance the claims of producers and consuming public against the potentially competing claims for safety of the environment and the interests of individuals and businesses affected by their proximity to agricultural operations.

2) A member's responsibility to the client or Employer is:

a) To act conscientiously and diligently in providing professional services.

Members should endeavour to put service above gain and excellence above quantity. If a member becomes aware of errors or omissions in his/her work, he/she must report the same to his/her client or employer, and immediately work to remedy such errors or omissions.

Expect as required by law, to maintain the confidentiality of client and employer information unless given the explicit consent of the client or employer.

b) A member should consider all information received from a client or employer as confidential unless such information is in the public domain.

Information obtained during and specific to a professional contract situation is confidential and must not be disclosed to others or used by the members outside that contracted situation without the consent of the client or employer. However, technical expertise gained by a member through work may be used in subsequent projects without consent from other parties.

c) To obtain a clear understanding of the client's or employer's objectives.

Members must clearly understand the objectives of the client or employer. Members must make inquiries regarding such objectives to ensure that professional services are provided in the context of complete and accurate information. It is recommended that all oral communication that is material to the delivery of professional services be confirmed in writing.

d) To inform the client or employer of any action planned or undertaken by the client or employer that a member believes is detrimental to good stewardship or in breach of known laws or regulations.

It is a member's duty to advise a client or employer of the consequence of questionable actions and inform the client or employer of the facts that lead the member's belief that the action is detrimental to good stewardship.

e) To refuse any assignment that creates a conflict of interest.

A conflict of interest exists where the duties and loyalty owed by a member to one party are, are likely to become, or to a reasonable, informed and objective observer would appear to be in conflict with the duties or loyalties the member owes to another party.

A member should not accept an assignment in which he/she has a personal or business interest unless that interest is disclosed and approved by the client or employer.

Where a member is in a position of providing professional services to more than one party with different interests in the same or related matter, the member must explain the significance of acting for more than one party to each of the affected clients or employer(s) (the parties) and obtain the written consent of the parties to continue working for more than one party. If any of the parties fail to give their consent the member must then determine whether it is possible to act on behalf of a subset of the parties without conflict. If conflict cannot be eliminated by acting only on behalf some of the parties, then the member should advise all the parties that he/she cannot continue to act for any of them in the matter that generates the conflict of interest.

Members must also advise the parties that no information received in connection with the common matter from the one can be treated as confidential so far as any of the other parties are concerned.

f) To not accept compensation from more than one employer or client for the same work, without the consent of all.

Members need to distinguish between the data or product, which becomes the property of the client; and the process or technical experience, which remains the property of the member.

3) The Agrologist's Responsibility to the Profession is:

a) To inspire confidence in Agrology by maintaining high standards in conduct and work.

A member must keep in mind that the work of an Agrologist is continuously open for public scrutiny and it is the responsibility of each individual to build and maintain a positive image of the field and the profession. Not only must a member perform his/her duties of employment to a high level of excellence, but the conduct of that member must also be of high standard.

b) To support activities for the advancement of the profession.

Members have an obligation to participate in the activities of the Institute (i.e., meetings, elections, holding office, mentoring) as the individual members situation and opportunities allow.

Members need to be constantly aware they are Agrologists and should, by their conduct, provide a positive image of the profession. Each member must be prepared to personally promote Agrology in personal contacts and communications, and to participate in specific promotional initiatives organized by the professional organizations.

c) Where a member believes another individual may be guilty of infamous or unprofessional conduct, negligence or breach of the Agrology Profession Act or bylaws:

to raise the matter with that individual and

if not resolved or if otherwise deemed necessary to inform the Registrar of the Institute in writing.

A member should ensure that the facts and understanding of the misconduct are correct. Consultation with a colleague or Registrar is encouraged if it may help clarify the issue. Members should make every effort to raise and resolve the issue in a candid and professional manner. Agrologists should note that only in exceptional circumstances is it inappropriate to raise such a matter with the other member if done courteously and politely.

d) To state clearly on whose behalf professional statements or opinions are made.

A professional opinion or statement prepared by an Agrologist is for a specific situation and set of circumstances. The content of a professional opinion should include the context in which it is made.

e) To sign and seal only those plans, reports, and other documents for which the members are professionally responsible and which were prepared by or under the direction of the member.

Members who affix their seal and/or signature assume responsibility for and understand the document. The responsible professional must have exercised sufficient control and association with the document so he/she can sign and seal the document based on personal knowledge. Members will not associate themselves with documents, reports or statements that misrepresent, distort or omit material facts. Members should familiarize themselves with information that details the procedures and protocols that are associated with the use and practice of sealing professional works.

4) A member's professional responsibility to other members is:

a) To abstain from undignified or misrepresentative public communication with or about members.

Conduct between members should be characterized by respect, courtesy, honesty, and good faith. Direct and honest criticism between professionals is acceptable and professional debate is encouraged when characterized by fairness and propriety.

Members should be courteous when criticizing the work of another member and be as careful with a colleague's reputation as they would be with their own. Members will advise another regulated member in advance if they are reviewing/critiquing the other's work for a specific project. An individual member will not make statements or representations on behalf of the Institute without prior authorization.

b) To give credit for professional work to whom credit is due.

Members should always acknowledge the work and contributions of others when directly using that work in whole or in part. Members should clearly understand and appreciate that the unpaid use of marketable processes and technology developed by another member could jeopardise that other member's livelihood.

Members will follow the rules and law of copyright. Members will secure releases for any data, process (es), and publication(s) obtained from written or electronic sources.

c) To share knowledge and experience with other members.

Each member has a duty to new members and to the future of the Institute to be available as a mentor for new members. Individual members should offer and seek out constructive professional discussion and debates with colleagues to maintain a vibrant and progressive profession.

Code of Ethics, Revised September, 2010