Standards Document for Continuing Education

Educational Areas

Forward

To become a Certified Crop Adviser, one must pass An International exam and a state/regional/provincial exam, have 5 years of advising experience with farmer/grower clients, be supported by letters of recommendation, and sign a code of ethics.

The minimum competency exams stress knowledge and skills in : Nutrient Management, Soil and Water Management, Pest Management, and Crop Management. The Performance Objectives documents outline competencies and objectives for these subject matter areas. After demonstrating minimum competence by passing the exams the Certified Crop Adviser, maintains certification statue by attaining a minimum number of Continuing Education Units.

This document has been developed to help guide: 1) continuing education program development and 2) allow CCAs to be more involved in defining continuing education direction. This document achieves the former by defining the **educational areas**, their **scope** and **subject matter** for course development vendors producing continuing education programs. This document achieves the latter by engaging the entire CCA structure and CCAs in particular to define subject matter areas that best represent new knowledge and learning needs among CCAs.

The purpose of the Minimum Competency Performance Objectives document is to define the minimum skills and knowledge base necessary to become a CCA. This Continuing Education document defines the subject matter and "cutting edge" learning needs of agricultural professionals. These are the additional educational areas that CCA will find useful in building on the minimum competencies established when they passed the exam. This document will guide educators in program development, and CCA's in deciding which programs are appropriate for their continuing education needs. The document will also be used to determine if continuing education programs are appropriate for awarding CEUs.

This document will be used for submission of Continuing Education Unit approval forms. Every educational program or self-study course submitted for CEU credit should reference the **educational area** and the **subject matter,** and **Area of Expertise** that best defines the scope of the continuing education program..

Introduction:

The continuing education program of the Certified Crop Adviser program provides learning opportunities for CCAs to improve their knowledge and skills as crop advisers. Educational programs can be created by anyone with appropriate credentials, and can be submitted for CEU review and course assignment to either local or the International CCA boards.

In order to maintain certification status, a CCA, must complete 40 CEUs in a two-year cycle with a minimum of 5 CEU's in each of the 4 categories of Nutrient Management, Soil and Water Management, Pest Management, and Crop Management. In addition, up to 5 CEU's can also be attained in the Professional Development category. This category has no minimum credit requirement.

Educational Area:

Nutrient Management

Scope:

Nutrient management is an integral part of all crop production systems. It is important for the CCA to make recommendations that meet crop nutrient requirements, compliment the grower's management practices, and minimize adverse effects on the environment.

Nutrient Management Subject Matter Areas

1. **Soil Fertility**
   Areas of expertise
   - Soil sampling procedures
   - Soil testing components, uses, and applications to cropping systems
   - Analysis, interpretation and uses of soil testing data
   - Designing, conducting, and interpreting results of experimental trials
   - Effects of Soil pH on crop growth
   - Nutrient management in cropping systems
   - Role and fate of nonessential elements in cropping systems

2. **Plant nutrition**
   Areas of expertise
   - Nutrient uptake from soil, air, and water
   - Nutrient mobility within plants
   - Evaluating crop nutrient status
   - Nutrient deficiencies, sufficient levels, luxury consumption, and toxicity
   - Tissue sampling and testing
   - Nutrient management planning
   - Nutrient management for environmental concerns
   - Using environmental assessment tools in nutrient management

3. **Integrating nutrient management between crop and animal systems**

4. **Compliance with government regulations and programs**
   Areas of Expertise
   - Conservation Reserve Program
   - Comprehensive Nutrient Management Plans
   - State-based water quality control regulations
   - Environmental Quality Improvement Program
   - Biosolids preapplication monitoring reports
   - TMDL-mandated orders

5. **Economic considerations for nutrient management planning**
   Areas of Expertise
   - Use, testing, and availability of livestock manures

6. **Security and safety in handling, storage and sales of nutrients and pesticides**

7. **Nutrient sources**
   Areas of Expertise
   - Commercial products
   - Organic materials
   - Industrial byproducts

8. **Nutrient application systems**
   Areas of Expertise
   - Variable-rate technology
   - Uniform-rate technology
   - Field application methods

9. **Nutrient management in organic production**
   Areas of Expertise
   - Plant nutrient-pest interactions in organic systems
   - Plant nutrient-pesticide interactions in organic systems

Educational Area:
Soil and Water Management

Scope:
Soil and water management is an integral part of nutrient management, pest management and crop management. Soil properties, site characteristics, and water movement affect potential hazards from nutrients and pesticides in the environment, and influence crop management and tillage practices needed for economic crop production and environmental protection. The CCA should be able to examine soils in the field, and with the aid of additional information, make effective crop management decisions. With the additional aid of laboratory tests, the CCA should be able to diagnose soil and water problems observed in the field.

Soil and Water Management Subject Matter Areas:

1. **Effect of Physical, Chemical and Biological properties of soils on management practices**

2. **Maintaining soil and water quality in the environment:**
   Areas of Expertise
   - Soil biological considerations
   - Soil erosion control
   - Water, nutrient, and chemical movement off-site
   - Fate of potential pollutants
   - Effects of tillage on water and soil quality

3. **Characterization of soils and landscapes**
   Areas of Expertise
   - Obtaining and using Information sources to characterize soils an landscapes
   - Applications of soil and landscape information to crop, soil, and water management systems

4. **State and federal air and water-quality standards and regulations.**

5. **Plant-water relations and irrigation and drainage technologies.**

6. **Land-use capability and soil productivity**

7. **Water management**
   Areas of Expertise
   - Aspects of Irrigation management
   - Drainage types, construction, and installations
   - Seepage
   - Methods of moisture conservation

8. **Soil degradation causes and remedies**

Pest Management:

Scope:
Pest Management is an ever-evolving science. New pesticides are discovered, developed, and registered annually, new pests are imported to North America, periodically requiring new control that are both cost effective and environmentally friendly. The CCA needs to stay current with emerging control measures or practices, new pesticide products, and current state and federal regulations for their proper use.

Pest Management Subject Matter Areas:

1. Integrated Pest Management

Areas of Expertise

- Pesticide mode of action and pesticide interactions
- Proper use of crop protection products and label updates
- Emerging technologies for pest identification, survey, and damage estimates.
- Novel pest control agents
- Evaluating the reliability of pest management information sources, decision making tools, and web resources
- Using crop, pesticide, and environmental information to make pesticide recommendations
- Biology of pests.
- Economics of pest control strategies
- Managing weed and insect pest resistance
- Refugia management for biotechnology crops
- Segregation of herbicide-tolerant or insect-resistant crops

2. Pest Management Decision-Making Skills

Areas of Expertise

- Applying research and principles of modeling and forecasting to pest management
- Evaluating climate and management factors in weed control systems
- Evaluating Non-traditional pest control methods
- In-field evaluations and management of cropping and pest management systems

3. Application Technologies In Pest Management

Areas of Expertise

- Calibration, application, and advances in spray technologies
- Precision agriculture technologies

4. Pest Management in Non-traditional Crop Advising

Areas of Expertise

- Using grazing and pasture management for pasture pest control
- Wildlife habitat management
- Home pesticide use
- Turf and ornamental pesticide use
- Pest control strategies and options to meet organic standards

5. Safety and Environmental Aspects of Crop Protectants

Areas of Expertise

- Environmental toxicology and signs and symptoms of exposure to toxins
- Pesticide use and food safety concerns
- Pesticide waste remediation
- Pesticide Safety, proper use, and label restrictions
- Effects of pesticide misuse on crops and wildlife.
- Wildlife as pests and methods of exclusion and control

Crop Management

Scope:
From new biotechnology applications to new organic standards, Crop Advisors have a significant opportunity to lead the industry in proper adoption of new products and production systems. CCAs need to have a thorough understanding of crops and cropping systems in order to provide sound management advice.

Crop Management Subject Matter Areas:

1. Crop Biology, Biotechnology, Physiology, and Morphology

Areas of Expertise

- Uses of genomics, biotechnology, and transgenic technology in crop improvement
- Crop physiology in relation to crop management decision making
- Climate effects on production agriculture
- Effects of plant stresses on crop management and productivity
- Weather effects on crop management

2. Innovative and Emerging Crop Management Tools

Areas of Expertise

- Innovations in cropping systems management
- New technologies in sustainable agriculture
- Techniques to enhance seed germination and emergence
- Management techniques for producing identity preserved crops
- Use of precision ag technology in crop management
- Advances in harvest and storage technology,
- Using chemicals to enhance crop growth and harvest conditions

3. Crop Management Decision-Making Skills

Areas of Expertise

- Integrating soil, climate, and crop data in crop management systems
- Evaluating new and novel cropping systems

4. Alternative cropping systems

Areas of Expertise

- Management techniques for row-crop, grain, turf, organic, vegetable, and horticulture production systems
- Producing crops for fuel and energy uses
- Agro-forestry production techniques
- Management techniques for pasture and range management systems
- Greenhouse seedling and transplanting technology
- Emerging technologies in vegetable and fruit crop production systems

5. Crop Production Equipment and use

Areas of Expertise

- Equipment innovations and modifications in crop production and harvesting
- Effects of tillage systems on soil erosion
- Precision Ag equipment

6. Economic Considerations

Areas of Expertise

- Government programs and their effects on cropping decisions
- Crop budgeting
- Crop insurance programs
- Crop Marketing & Contracting plans
- Managing production risk
- Post-harvest crop quality, feed, and forage analysis,

Professional Development

Scope:
The pace of change and innovation in agriculture today is unprecedented and the demands being placed on CCAs have expanded to meet these challenges. It is brought on, in part, by growing environmental concerns, consumer demands, international trade liberations, and the use of science and communication technologies that were unthinkable a decade ago. In recognition of the multifaceted services required by CCAs, professional development is an important component of being an effective professional CCA.

Professional Development Subject Matter:

1. **Applications of ethics to crop advising.**

2. **Crop Advising Business and legal issues.**
   Areas of Expertise
   - Employment law
   - Errors and omissions insurance
   - Liability issues

3. **Technology applications to crop advising**
   Areas of Expertise
   - Applications of computer technology and programs to crop advising
   - Using expert systems

4. **Business applications**
   Areas of Expertise
   - Business planning, budgeting, and financial analysis
   - Land, labor and capitol management
   - Developing marketing plans for crop advising products and services
   - Time management

5. **Economic issues in agriculture**
   Areas of Expertise
   - Micro and macro-economic topics
   - Global supply and demand forecasts
   - International trade policies
   - Commodity marketing and trade

6. **Communications/leadership/interpersonal skills**
   Areas of Expertise
   - Business and technical writing
   - Interpersonal skills and conflict resolution
   - Leadership skills, meeting facilitation
   - Diversity training
   - Presentation skills, adult learning styles, creative training techniques
   - Media training
   - Developing sales and marketing techniques