# Certificate of Agronomy: Foundations in Crop Science ACS

21 – 25 June 2027
Toronto (Canada)



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## Why This Course

Agronomy is a core discipline for improving crop productivity, soil health, farm efficiency, and long-term agricultural sustainability. Modern crop production requires more than planting and harvesting; it depends on understanding soil conditions, plant growth, nutrient needs, pest risks, climate factors, and the right use of technology.

This intensive 1-week Certificate of Agronomy Training program provides participants with a practical foundation in modern crop science and field management. The course covers soil science, crop physiology, crop production planning, nutrient management, integrated pest management, precision agriculture, conservation practices, and climate-smart farming. Through applied exercises and real-world agricultural examples, participants will gain the confidence to make informed agronomic decisions and support more productive and sustainable farming operations.

## What You'll Learn and Practice

By joining this program, you will:

- Understand the fundamental principles of soil science and crop physiology.
- Identify soil formation processes, composition, classification, and key properties.
- Assess soil fertility, soil health, and erosion risks.
- Understand plant growth stages and environmental factors affecting crop performance.
- Select suitable crop varieties and design crop rotation plans.
- Apply seeding techniques and plant population management practices.
- Understand essential plant nutrients and their role in crop yield and quality.
- Interpret soil testing results and develop nutrient management recommendations.
- Apply fertilizer selection, timing, placement, and application methods.
- Develop integrated pest management strategies for weeds, diseases, and insects.
- Apply pesticide safety and responsible application practices.
- Explore precision agriculture, conservation tillage, cover crops, and climate-smart practices.



## The Program Flow

### Day 1: Soil Science and Management

- Understand soil formation, composition, and classification.
- Identify physical and chemical properties that influence crop production.
- Assess soil fertility and soil health indicators.
- Interpret basic soil conditions for better management decisions.
- Apply soil conservation and erosion control techniques.

### Day 2: Crop Physiology and Production

- Understand plant growth and development stages.
- Analyze crop adaptation to climate, soil, water, and environmental conditions.
- Select suitable crop varieties based on production goals and field conditions.
- Apply crop rotation principles to improve productivity and soil health.
- Use seeding techniques and plant population management practices effectively.

### Day 3: Nutrient Management

- Identify essential plant nutrients and understand their functions.
- Conduct and interpret basic soil tests.
- Select suitable fertilizer types based on crop and soil needs.
- Apply fertilizer using appropriate timing, placement, and application methods.
- Explore precision nutrient management and variable rate technology.

### Day 4: Integrated Pest Management

- Understand weed biology and practical control strategies.
- Identify common crop diseases and management approaches.
- Recognize insect pests and assess their impact on crop performance.
- Develop integrated pest management plans for sustainable crop protection.
- Apply pesticide safety and responsible application techniques.

### Day 5: Sustainable Agriculture and Technology

- Understand conservation tillage systems and their benefits.
- Explore the role of cover crops in soil health and erosion control.
- Use precision agriculture tools and technologies to improve farm efficiency.
- Apply climate-smart agriculture practices for resilience and sustainability.
- Build practical strategies for combining productivity with environmental protection.



## Individual Impact

- Build confidence in applying agronomic principles to real farming situations.
- Strengthen skills in soil assessment, crop planning, and nutrient management.
- Improve the ability to identify and manage common pests, weeds, and diseases.
- Gain practical awareness of precision agriculture and conservation techniques.
- Develop stronger decision-making skills for sustainable crop production.

## Work Impact

- Improve crop yield, quality, and field productivity through better agronomic planning.
- Strengthen soil health and long-term land sustainability.
- Reduce input waste through improved nutrient and pest management.
- Support more efficient use of technology in farming operations.
- Enhance farm resilience through conservation and climate-smart agriculture practices.

## Training Methodology

This program combines agronomy fundamentals with practical field-focused application through:

- Soil science and fertility assessment exercises.
- Crop planning, variety selection, and rotation design activities.
- Soil testing interpretation and nutrient recommendation workshops.
- Integrated pest management case studies and identification exercises.
- Precision agriculture and variable rate technology discussions.
- Sustainable farming and climate-smart agriculture planning activities.

## Beyond the Course

Upon completion, participants will be able to:

- Conduct and interpret basic soil tests for informed management decisions.
- Develop comprehensive crop management plans for farming operations.
- Create integrated pest management strategies for common crop pests.
- Apply nutrient management practices to improve crop yield and quality.
- Use precision agriculture tools to improve farm efficiency.
- Support sustainable and conservation-focused agricultural production.

