

# **SOUTH DAKOTA CCA STUDY GUIDE**

The publications listed here are reference materials for the Performance Objectives for South Dakota Certified Crop Advisers. Publications are listed for each area under the four competency areas: Soil Nutrient Management, Soil and Water Management, Pest Management and Crop Protection. In many instances, individual publications cover more than one area, though they have been specifically identified for a given area objective.

This study guide is not intended to provide direct questions and answers for the CCA exams, but rather to provide reference materials for continuing education. In this electronic format reference materials may be easily updated to reflect the latest research based agronomic information for the benefit of the adviser and his/her clientele.

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## **SOIL NUTRIENT MANAGEMENT COMPETENCY AREAS**

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[How Soil Holds Water](#)

[Plant Growth Regulators: Their Use in Crop Production](#)

**Area 2. Lime Application**

[Fertilizer Recommendations Guide – South Dakota State University Cooperative Extension Service EC 750.](#)

[Applying Fertilizer and Lime to CRP Land, Iowa State University, University Extension CRP-5 Conservation Reserve Program Issues and Options](#)

[Ag Lime Impact On Yield in Several Tillage Systems, Iowa State University](#)

**Area 3. N, P, K, plant requirements**

[Fertilizer Recommendations Guide – South Dakota State University Cooperative Extension Service](#)

[Best Management Practices for Nitrogen Use Statewide in Minnesota – University of Minnesota, Cooperative Extension Service](#)

[Understanding Nitrogen in Soils, University of Minnesota, Cooperative Extension Service](#)

[Effects of UAN or urea on growing corn, Iowa State University Cooperative Extension Service](#)

[Nitrogen fertilizer management options, Iowa State Cooperative Extension Service](#)

[Nitrogen Fertilizers, Michigan State University Cooperative Extension Service](#)

[Variable Rate Fertilization for Field Crops – Equipment Requirements – North Dakota State University](#)

[Management of Urea Fertilizers, North Central Regional Publication #326](#)

[Fertilizer Urea, University of Minnesota Cooperative Extension Service](#)

[Why manage phosphorus, Iowa State University Cooperative Extension](#)

[Phosphorus Facts Soil, Plant and Fertilizer, Kansas State University Cooperative Extension Service](#)

[Interpreting Mehlich-3 soil test results, Iowa State University Cooperative Extension Service](#)

[Potassium deficiency symptoms in corn, Iowa State University Cooperative Extension Service](#)

[Nitrogen Best Management Practices for Corn in South Dakota](#)

[Using Manure as a Nitrogen Fertilizer](#)

#### **Area 4. Secondary nutrient and micronutrient plant requirements**

[Fertilizer Recommendations Guide – South Dakota State University Cooperative Extension Service](#)

[Use and Management of Micronutrient Fertilizers in Nebraska, NebGuide G82-596-A](#)

#### **Area 5. Nutrient Application**

[How Soil Holds Water](#)

[Sampling for Plant Tissue Analysis – University of Wisconsin](#)

[Guidelines for Soil Sampling, NebGuide G91-1000-A --](#)

[Interpretation of Soil Test Results, Iowa State University Cooperative Extension Service](#)

[Soil Sampling as a Basis for fertilizer Application, North Dakota State University Cooperative Extension Service](#)

## **Area 6. Plant nutrient sources and application**

[Fertilizer Recommendations Guide – South Dakota State University Cooperative Extension Service EC 750.](#)

[Soil Sampling as a Basis for fertilizer Application, North Dakota State University Cooperative Extension Service](#)

[Effectiveness of using low rates of plant nutrients, North Dakota State University -](#)

[Equipment considerations: liquid fertilizer, Iowa State University Cooperative Extension Service](#)

[Manure Management, University of Minnesota Cooperative Extension Service](#)

[Management Practices: How to Sample Manure for Nutrient Analysis, Iowa State University Cooperative Extension Service](#)

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[South Dakota Laws regarding fertilizer and manure application](#)

# **SOIL AND WATER MANAGEMENT COMPETENCY AREAS**

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[Soil cation ratios for crop production, University of Minnesota](#)

[Soil electrical conductivity mapping, University of Wisconsin](#)

[Planning farmland drainage systems, University of Minnesota](#)

[Soil, water and plant characteristics important to irrigation, North Dakota State University](#)

## **Area 2. Soil conservation**

[Buffers, common-sense conservation – NRCS](#)

[Using conservation tillage to control erosion, University of Minnesota](#)

[Preventing soil erosion after spring rains, Iowa State University](#)

[Estimating percent residue cover using the line-transect methods, University of Nebraska](#)

[Wet soils vulnerable to compaction, Iowa State University](#)

## **Area 3. Tillage operations and soil characteristics**

[Soil, water and plant characteristics important to irrigation, North Dakota State University](#)

[Wet soils vulnerable to compaction, Iowa State University](#)

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[Soil, water and plant characteristics important to irrigation, North Dakota State University](#)

[Managing saline soils in North Dakota, North Dakota State University](#)

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[Managing nitrogen to prevent groundwater contamination, North Dakota State University](#)

[Potential priority watersheds for protection of water quality from contamination by manure nutrients, NRCS](#)

[Nitrogen application with irrigation water – Chemigation, University of Minnesota](#)

[Sources of groundwater contamination. DNR](#)

## **PEST MANAGEMENT COMPETENCY AREAS**

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[Use of Seed Coating and Fungicide Treatment in Establishing Alfalfa, South Dakota State University](#)

[Herbicide Mode of Action, Iowa State University](#)

[Integrated Pest Management \(IPM\) BMP's for Groundwater Protection from Pesticides, north Dakota State University](#)

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[Weed Control in Forage Legumes, South Dakota State University](#)

[Weed Control in Shelterbelts and Tree Plantings, South Dakota State University](#)

[Identification and Control of Wormwood Sage, South Dakota State University](#)

[Noxious Weed Control, South Dakota State University](#)

[Control of Biennial Thistle, South Dakota State University](#)

[Grassy Weed Control, South Dakota State University](#)

[Leafy Spurge Control, South Dakota State University](#)

[Weed Control in Oilseed Crops 2011, South Dakota State University](#)

[Weed Control in Soybeans 2011, South Dakota State University](#)

[Weed Control in Small Grains and Millet 2011, South Dakota State University](#)

[Weed Control in Corn 2011, South Dakota State University](#)

[Weed Control in Sorghum 2011, South Dakota State University](#)

[Fall Control of Field Bindweed, South Dakota State University](#)

[Weed Control in Sorghum, South Dakota State University](#)

[Weed Control in CRP, South Dakota State University](#)

[Weed Control in Pulse Crops, South Dakota State University](#)

[Weed Seedling Identification, Iowa State University](#)

### **Area 3. Management of infectious plant diseases**

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[Alfalfa Disease Management, Iowa State University](#)

[Aflatoxins, South Dakota State University](#)

[Asian Soybean Rust, South Dakota State University](#)

[Phytophthora Root and Stem Rot of Soybeans, South Dakota State University](#)

[Soybean Diseases , South Dakota State University](#)

[Soybean Cyst Nematode, South Dakota State University](#)

[Common Root and Crown Rot Diseases in Wheat in South Dakota, South Dakota State University](#)

[Alfalfa Disease Management South Dakota State University](#)

[Crop Rotations for Managing Plant Disease, Iowa State University](#)

[Symptoms and Controls of Crop Diseases, North Dakota State University](#)

[Ergot, North Dakota State University](#)

[White mold life cycle, University of Minnesota](#)

#### **Area 4. Management of insects**

[IPM Strategies for Grasshopper Control, South Dakota State University](#)

[Emerging Insect Pests of Corn, South Dakota State University](#)

[Soybean Aphid Thresholds, South Dakota State University](#)

[Sunflower moths and banded sunflower moths, South Dakota State University](#)

[Sunflower Seed Weevils, South Dakota State University](#)

[European Corn Borer, South Dakota State University](#)

[Ladybugs of South Dakota, South Dakota State University](#)

[Bean Leaf Beetle in South Dakota, South Dakota State University](#)

[Alfalfa Weevil Control in South Dakota, South Dakota State University](#)

[Grasshopper Management In Winter Wheat, South Dakota State University](#)

[IPM Strategies for Grasshopper Control, South Dakota State University](#)

[The Armyworm and the Army Cutworm, North Dakota state University](#)

[Corn cutworms, University of Nebraska](#)

[Bt corn and the European Corn Borer, University of Minnesota](#)

#### **Area 5. Calibration of pesticide application equipment**

[Coveralls and aprons, South Dakota State University](#)

[Chemigation Management, South Dakota State University](#)

[Handling Pesticides Properly, South Dakota State University](#)



## **Area 6. Using pesticide in an environmentally sound way**

[Personal Pesticide Protection – Gloves, South Dakota State University --  
http://agbiopubs.sdstate.edu/articles/ExEx8123.pdf](http://agbiopubs.sdstate.edu/articles/ExEx8123.pdf)

[Pesticide Container Disposal and Recycling, South Dakota State University](#)

[Waste Pesticides, South Dakota State University](#)

[Chemigation Safety, South Dakota State University](#)

[Applying Pesticides Correctly, Virginia Cooperative Extension Service](#)

[Spray Equipment and Calibration, North Dakota State University](#)

[Sprayer Calibration Fundamentals, Colorado State University](#)

[How is the Assessment Process for Groundwater Contamination from Pesticides Used for BMP Selection, North Dakota State University](#)

## **Area 7. Integrated pest management**

[Alfalfa Management and pest management in South Dakota, South Dakota State University](#)

[Biocontrol of Noxious Weeds in South Dakota, South Dakota State University](#)

[Insect Pest Management Alternatives, South Dakota State University --  
http://agbiopubs.sdstate.edu/articles/ex8107.htm](http://agbiopubs.sdstate.edu/articles/ex8107.htm)

[Farmstead BMP Recommendations for Groundwater Protection from Pesticides, North Dakota State University](#)

# **CROP PROTECTION COMPETENCY AREAS**

## **Area 1. General crop adaptation**

[Complete crop production index, Iowa State University](#)

[Forage yield and quality of multileaflet alfalfa, South Dakota State University](#)

## **Area 2. Tillage systems used for seedbed preparation of row crops, small grain and forage crops**

[Fall Tillage and tillage equipment, Iowa State University](#)

[Conservation tillage and planting systems, University of Nebraska](#)

[Ridge plant systems: equipment, University of Nebraska](#)

## **Area 3. Seeding date factors**

[Complete crop production index, Iowa State University](#)

[Alfalfa Management and pest management in South Dakota, South Dakota State University](#)

[Sunflower production, South Dakota State University](#)

[Corn production guide, North Dakota State University](#)

## **Area 4. Seeding rates and pattern factors of major crops**

[Complete crop production index, Iowa State University](#)

[Alfalfa Management and pest management in South Dakota, South Dakota State University](#)

[Sunflower production, South Dakota State University](#)

[Plant populations for maximum corn yield potential](#)

[New opportunities in variable-rate seeding corn](#)

[Corn production, North Dakota State University](#)

[Crop rotations for increased productivity, North Dakota State University](#)

#### **Area 5. Seeding depth factors**

[Complete crop production index, Iowa State University](#)

[Alfalfa Management and pest management in South Dakota, South Dakota State University](#)

[Sunflower production, South Dakota State University](#)

[Corn production, North Dakota State University](#)

#### **Area 6. Crop damage, mortality and factors influencing replanting decisions**

[Winter injury in alfalfa :assessment and management, South Dakota State University](#)

[Small grain damage from frost dependent on many factors, North Dakota State University](#)

[Hail damage assessment to soybeans, Iowa State University](#)

[Frost damage or immature corn, South Dakota State University](#)

[Determining yield loss due to replanting, University of Minnesota](#)

[Uneven corn fields, Purdue University](#)

[Herbicide injury of Corn and Soybeans, Purdue University](#)

#### **Area 7. Cropping systems**

[Crop rotations for increased productivity, North Dakota State University](#)

**Area 8. Identification of crops in both seed and vegetative states**

[Sunflower production, South Dakota State University](#)

[Corn production, North Dakota State University](#)

**Area 9. Growth and development stages of major crops (SD)**

[Sunflower production, South Dakota State University](#)

[Corn production, North Dakota State University](#)

[Identifying leaf stages in small grains, North Dakota State University](#)

**Area 10. Crop improvement and biotechnology**

[Iowa State University – Biotechnology publications](#)

**Area 11. Precision Ag**

[Defining management zones for precision farming –](#)

[Yield monitors create on-and off-farm profit opportunities –](#)

[Site-specific farming: what is it? North Dakota State University](#)