# Course Readings and Information Source Credibility: Increasing Student Familiarity with University Extension and Government Publications

Colby Moorberg, PhD, CPSS

@ColbyDigsSoil



Kansas State University

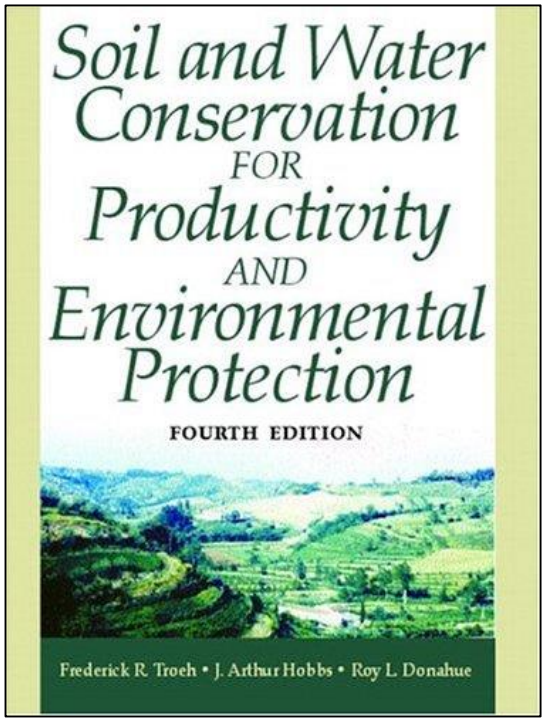
# Outline

- The course
- Textbook options and decision
- Overview of *Soil and Water Conservation: An Annotated Bibliography*
- Strategies for assigned readings and effective discussion
- Overview of an ongoing study examining student perception of information source credibility
- Conclusions
- Open discussion

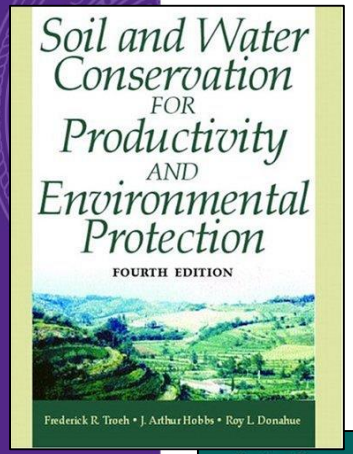
# The Course and Context

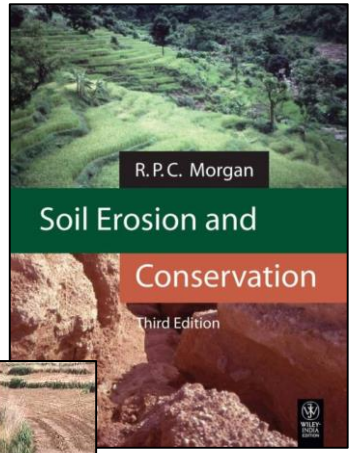
**AGRON 635 – Soil and Water Conservation**

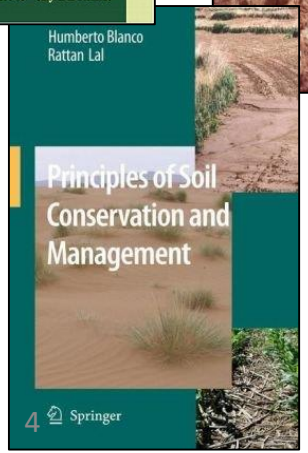
- Upper level undergraduate/lower level graduate course
- Students were buying but not reading the textbook
- Needed a new options for readings
- Wanted to flip the classroom



# Textbook Options



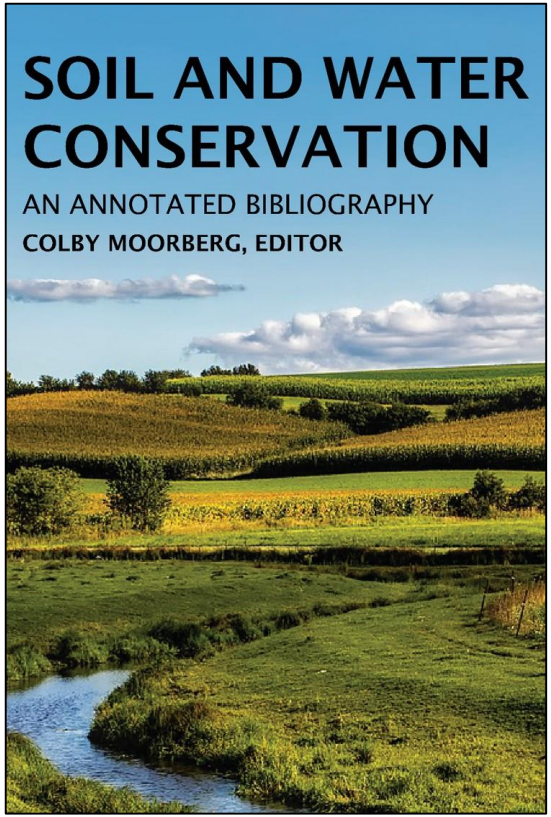




| Title | MSRP | Pros | Cons |
|---|---|---|---|
| Soil and Water Conservation for Productivity and Environmental Protection, 4th Edition (Troeh et al., 2003) | $116 | • Already used in AGRON 635<br>• Thorough<br>• Covers both soil and water conservation adequately<br>• Traditional textbook format | • Verbose<br>• Poor quality of figures<br>• High cost |
| Soil Erosion and Conservation (Morgan, 2005) | $85 | • Up-to-date<br>• Good figures<br>• Most affordable textbook option<br>• Traditional textbook format | • Has a cost<br>• Doesn't adequately cover water conservation and quality |
| Principles of Soil Erosion and Conservation (Blanco-Canqui and Lal, 2008) | $219 | • Most recent textbook<br>• Traditional textbook format<br>• Available as PDF | • Highest textbook cost<br>• Doesn't adequately cover water conservation and quality |
| Collection of free online resources | $0 | • No cost<br>• Trains students to seek out credible resources<br>• Concise resources are easy to read | • More work to identify resources for reading assignments<br>• Readings not consistent in style or length |

# The Decision

- Create a collection of free online resources
  - Extension publications
  - Gov. publications, reports, and fact sheets
  - NGO publications
  - Other free educational resources
- This approach
  - Exposes students to credible information sources
  - Facilitates student contribution to textbook development
- Research Questions
  - Does using this annotated bibliography change student perceptions of information source credibility?
  - Does exposure to extension and government publications train students to seek them out?



# Soil and Water Conservation: An Annotated Bibliography

- Published in Dec. 2019 by New Prairie Press
- Available formats:
  - PDF
  - MOBI (Kindle)
  - EPUB
  - Web book
- Optimized for accessibility
- 13 chapters
- >700 citations



4.

## CONSERVATION PRACTICES FOR FARMLAND

Colby Moorberg, Matthew Brungardt, Ryan Burns, Elliott Carver, Laura Starr, Mackenzie Tynon, Chris Weber, and August Williams

Abbreviations +

Contour Buffer and Prairie Strips −

*Contour Buffer Strips in Iowa. Photograph by Lynn Betts, courtesy of the USDA NRCS.*

de Kok-Mercado, O. 2019. Science-Based Trials of Rowcrops Integrated with Prairie Strips. https://www.nrem.iastate.edu/research/STRIPS/.

This website from Iowa State University describes the use of prairie strips planted using native species along contours in row crop fields. It features links to additional information, frequently asked questions, and a short video on prairie strips.

SWCS Events. 2018. Prairie Strips: Build Benefits Naturally. Ankeny, IA: SWCS. https://vimeo.com/291571298.

This three-minute video from the SWCS advocates prairie strips and features a personal anecdote from Larry Stone, a corn and soybean farmer in Iowa; Tim Youngquist, an Agricultural Specialist II from Iowa State University; and Lance Koch from the USFWS. In the video, the participants recommend dedicating 10% of the area of a farm to prairie strips. The effects on wildlife like pheasants and butterflies is briefly mentioned.

USDA NRCS. 2014. Contour Buffer Strips. Conservation Practice Standard 332. 4. Washington, D.C.: USDA. https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nrcs143_026249&ext=pdf.

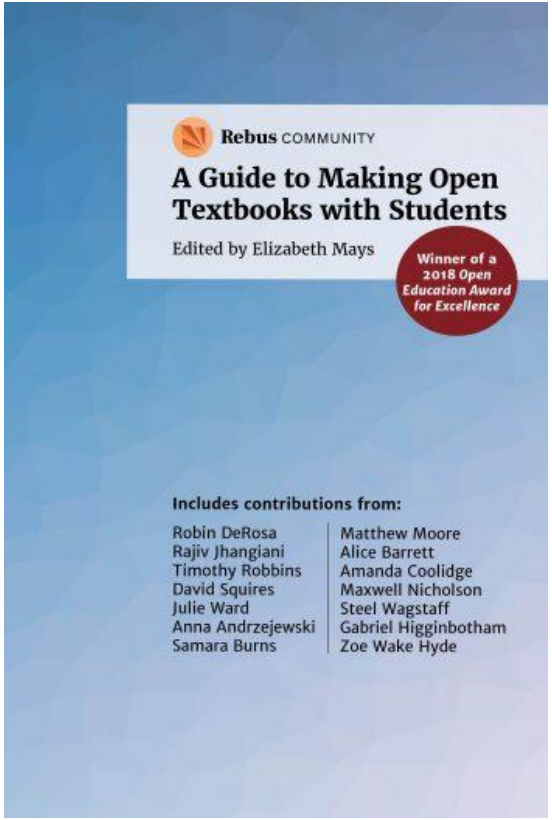
This conservation standard from the USDA NRCS defines contour buffer strips as

# Strategies for Effective Discussion

- Communicating reading assignments to students
- Accountability for assigned readings
  - Participation was 15% of overall grade
  - Students called on by name and asked specific questions
- Student-led discussions
  - Each student led two discussions
    - One on a conservation practice
    - One on a government agency/policy
  - I made comments and asked questions to fill in gaps
  - I took notes on the board to highlight important points

# OER-Enabled Pedagogy

- Annotated bibliography submissions were included in the textbook with written permission (MOU)
- Students selected their topics
- Students taught how to:
  - Search for relevant content
  - Evaluate credibility of content
  - Cite resources using Zotero
- Biggest concern – being explicitly identified as the creators
  - Concerns alleviated by the editing process
- More content is added by students each year

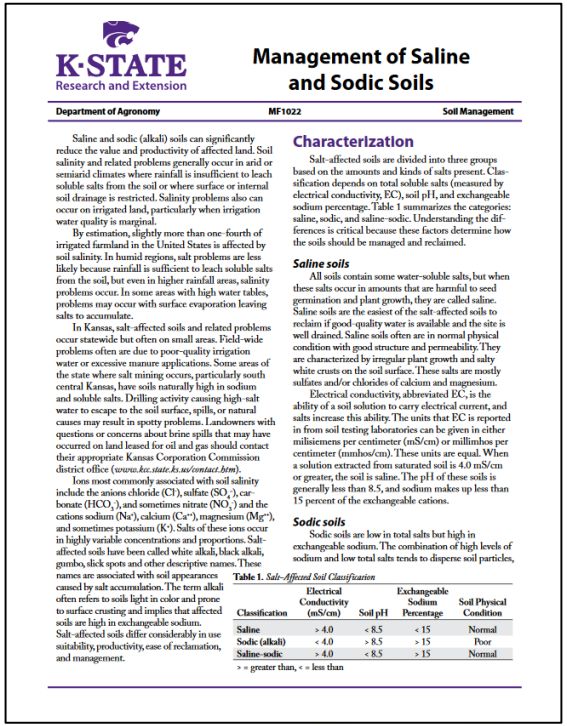


# Student Perceptions of Information Source Credibility

- Hypothesis
  - Regular exposure to extension and government publications through reading assignments from an open annotated bibliography will increase students' perceived credibility of these types of information sources relative to other types

# Extension and Government Publications

- Concise and written for a general audience
- Prevalent in soil and water conservation discipline
- Written by credible professionals
- Usually have a review process
- Rarely openly licensed



K-STATE Research and Extension

**Management of Saline and Sodic Soils**

Department of Agronomy | MF1022 | Soil Management

Saline and sodic (alkali) soils can significantly reduce the value and productivity of affected land. Soil salinity and related problems generally occur in arid or semiarid climates where rainfall is insufficient to leach soluble salts from the soil or where surface or internal soil drainage is restricted. Salinity problems also can occur on irrigated land, particularly when irrigation water quality is marginal.

By estimation, slightly more than one-fourth of irrigated farmland in the United States is affected by soil salinity. In humid regions, salt problems are less likely because rainfall is sufficient to leach soluble salts from the soil, but even in higher rainfall areas, salinity problems occur. In some areas with high water tables, problems may occur with surface evaporation leaving salts to accumulate.

In Kansas, salt-affected soils and related problems occur statewide but often on small areas. Field-wide problems often are due to poor-quality irrigation water or excessive manure applications. Some areas of the state where salt mining occurs, particularly south central Kansas, have soils naturally high in sodium and soluble salts. Drilling activity causing high-salt water to escape to the soil surface, spills, or natural causes may result in spotty problems. Landowners with questions or concerns about brine spills that may have occurred on land leased for oil and gas should contact their appropriate Kansas Corporation Commission district office (*www.kcc.state.ks.us/contact.htm*).

Ions most commonly associated with soil salinity include the anions chloride ($Cl^-$), sulfate ($SO_4^{2-}$), carbonate ($HCO_3^-$), and sometimes nitrate ($NO_3^-$) and the cations sodium ($Na^+$), calcium ($Ca^{++}$), magnesium ($Mg^{++}$), and sometimes potassium ($K^+$). Salts of these ions occur in highly variable concentrations and proportions. Salt-affected soils have been called white alkali, black alkali, gumbo, slick spots and other descriptive names. These names are associated with soil appearances caused by salt accumulation. The term alkali often refers to soils light in color and prone to surface crusting and implies that affected soils are high in exchangeable sodium.

Salt-affected soils differ considerably in use suitability, productivity, ease of reclamation, and management.

## Characterization

Salt-affected soils are divided into three groups based on the amounts and kinds of salts present. Classification depends on total soluble salts (measured by electrical conductivity, EC), soil pH, and exchangeable sodium percentage. Table 1 summarizes the categories: saline, sodic, and saline-sodic. Understanding the differences is critical because these factors determine how the soils should be managed and reclaimed.

### *Saline soils*

All soils contain some water-soluble salts, but when these salts occur in amounts that are harmful to seed germination and plant growth, they are called saline. Saline soils are the easiest of the salt-affected soils to reclaim if good-quality water is available and the site is well drained. Saline soils often are in normal physical condition with good structure and permeability. They are characterized by irregular plant growth and salty white crusts on the soil surface. These salts are mostly sulfates and/or chlorides of calcium and magnesium.

Electrical conductivity, abbreviated EC, is the ability of a soil solution to carry electrical current, and salts increase this ability. The units that EC is reported in from soil testing laboratories can be given in either millisiemens per centimeter (mS/cm) or millimhos per centimeter (mmhos/cm). These units are equal. When a solution extracted from saturated soil is 4.0 mS/cm or greater, the soil is saline. The pH of these soils is generally less than 8.5, and sodium makes up less than 15 percent of the exchangeable cations.

### *Sodic soils*

Sodic soils are low in total salts but high in exchangeable sodium. The combination of high levels of sodium and low total salts tends to disperse soil particles,

**Table 1.** *Salt-Affected Soil Classification*

| Classification | Electrical Conductivity (mS/cm) | Soil pH | Exchangeable Sodium Percentage | Soil Physical Condition |
|---|---|---|---|---|
| Saline | > 4.0 | < 8.5 | < 15 | Normal |
| Sodic (alkali) | < 4.0 | > 8.5 | > 15 | Poor |
| Saline-sodic | > 4.0 | < 8.5 | > 15 | Normal |

> = greater than, < = less than

(Ruiz Diaz and Pressley, 2017)

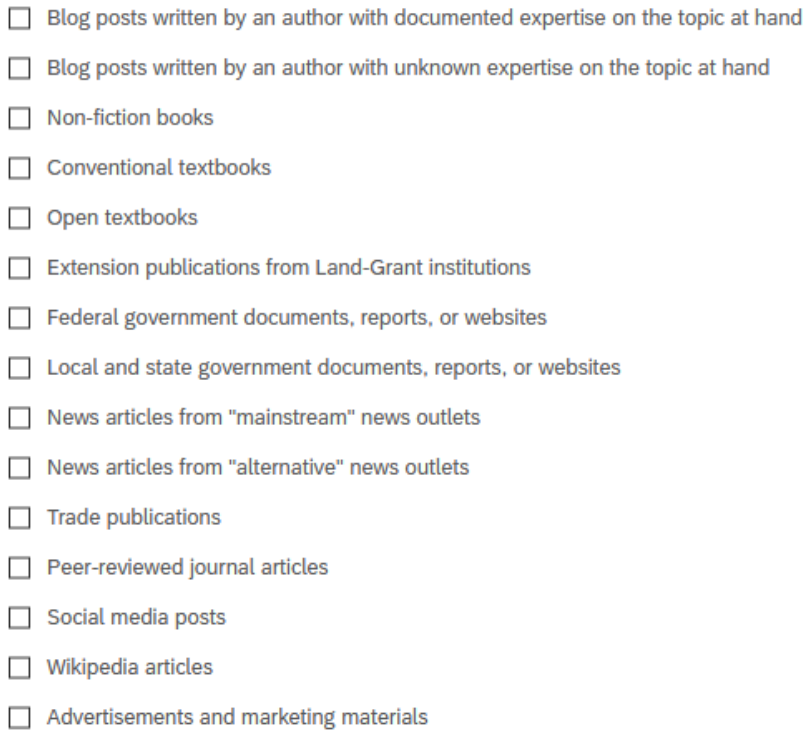
# Survey Methods

- Surveys conducted in first & last week of semester
- Seven participating universities

| School | Course | Frequency | Annual Enrollment | 2021-2022 Enrollment |
|---|---|---|---|---|
| Auburn University (AU) | CSES 580 – Soil Resources and Conservation | Once per year | 15 | 30 |
| Austin Peay State University (APSU) | AGRI 4220/5220 - Soil and Water Conservation | Once every two years | 24 | 24 |
| California State University Chico (CSU Chico) | PSSC 356 - Soil Quality and Health | Once per year | 48 | 96 |
| Dickinson State University (DSU) | Soil 321 - Soil Management and Conservation | Once every two years | 12 | 12 |
| Fort Hays State University (FHSU) | AGRI 625 - Soil and Water Management | Once per year | 18 | 36 |
| Kansas State University (KSU) | AGRON 635 - Soil and Water Conservation | Once per year | 12 | 24 |
| | | | **Total:** | **222** |

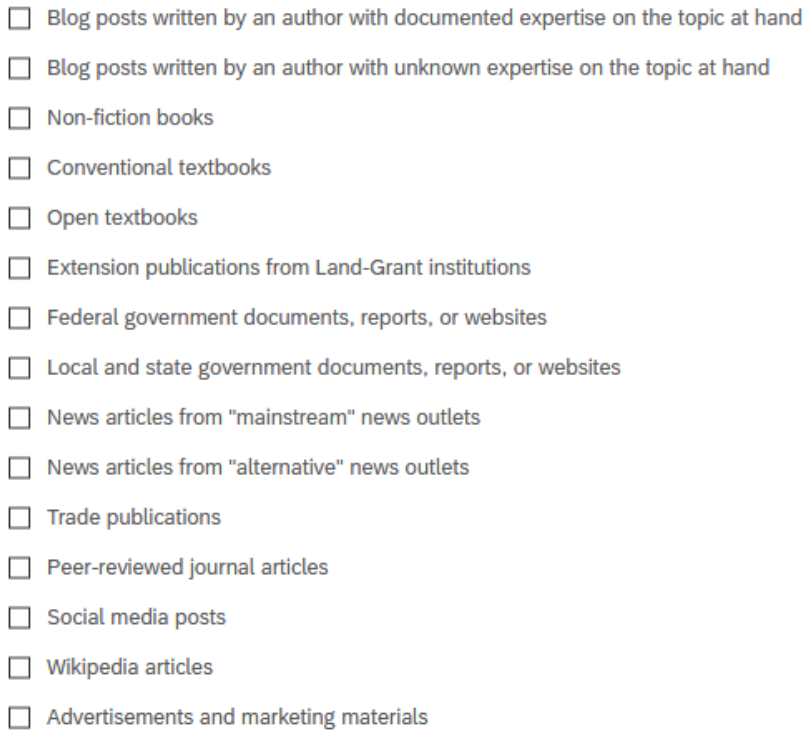
# Survey Methods

- Conducted online using Qualtrics
- Anonymous, but includes questions on demographics
- Focuses on 15 information types
- Students are asked to, “Please rate how you perceive the credibility of _____.”
  - A. Not credible
  - B. Somewhat credible
  - C. Credible
  - D. Very credible
  - E. Extremely credible



# Survey Methods

- “Which of the following types of information sources do you actively seek out during an initial search for information?”
- “Which of the following types of information sources do you prefer to cite in papers and other writing assignments?”
- “Which of the following information types do you actively avoid or ignore? Select all that apply.”



# What's Next?

- Study is ongoing
  - Spring 2021 to fall 2022
- I'll present results at a future TLC discussion

# More Information

- Download a copy of *Soil and Water Conservation: An Annotated Bibliography* (Moorberg, 2019): https://newprairiepress.org/ebooks/30/
- Read it online: https://kstatelibraries.pressbooks.pub/soilandwater/
- Read the published case study (Moorberg, 2020b): https://doi.org/10.1002/nse2.20014
- Watch a lightning talk on the case study (Moorberg, 2020a): https://www.youtube.com/watch?v=FDuSZ5tpnsc&feature=youtu.be

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# Contact Information


- moorberg@ksu.edu
- @ColbyDigsSoil




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# Questions

- Questions for me
- Questions for you
  - What strategies do you use to engage students in assigned readings?
  - How do you teach students to seek credible information sources?