



Irrigation Toolbox Chapter 2

Irrigation System Planning

Irrigation System Planning

Introduction

- The material provided in this section is intended to serve as a framework for conservation irrigation system planning.
- Training emphasizes the basic steps in the irrigation planning process in development of ecosystem based management systems.
- Trainers should modify the training material referenced as necessary to achieve the planned skill level for the trainees
- Trainers are encouraged to include locally developed training materials to complement and/or supplement the referenced material.
- As new training materials are developed by trainers, they are encouraged to furnish copies to the Irrigation ToolBox Manager for inclusion in future versions of the assembled material.

Suggested Objectives

1. Plan irrigation systems using processes included in the National Resource Planning Handbook.

Suggested Outline

I. Introduction

II. Body

A. Planning

1. Identify resources of concern.
2. Determine irrigator objectives.
3. Inventory resources.
4. Analyze resource data.
5. Formulate irrigation alternatives.
6. Evaluate alternatives.
7. Document decisions.
8. Water user implements irrigation plan
9. Follow-up.

III. Summary

Note: Not all copies of documents that were contained in the original Irrigation Training Toolbox are available electronically.

If you are unable to find a hard copy of a document in your state, you may be able to borrow a copy from the Water Management Engineer at your regional National Technology Support Center.

Irrigation Systems Planning

Irrigation Methods That Will Be Covered

1. Sprinkler Irrigation Systems
2. Surface Irrigation Systems
3. Trickle Irrigation Systems
4. Subsurface Irrigation Systems
5. Fertigation/Chemigation Systems

Irrigation Systems Planning

1. Sprinkler Irrigation Systems

Reference Material

- NEH Part 652: National Irrigation Guide
 - i. Chapter 10: Conservation Management Systems and Irrigation Planning
 - ii. Chapter 15: Resource Planning and Evaluation Tools and Worksheets
- NEH 15, Chapter 11: Sprinkle Irrigation.
- Applicable State Irrigation Guides.
- "Management of Farm Irrigation Systems", ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

Toolbox Material

- Publication "Planning for an Irrigation System", Irrigation Association
- Video 003 "Conservation Irrigation for New Employees", NRCS, Module 7.3
 - i. Part A (20:41)
 - ii. Part B (7:47)
 - iii. Part C (19:04)
 - iv. Part D (15:42)
 - v. Part E (13:10)
- Video 004 "Best Management Practices For Sediment Reduction Within Western Stanislaus County", NRCS, CA (16:50)
- Video 005 "No Water - No Future, Key to Effective Water Management", Irrigation Association. (15:14)

Facilitation Options

- Self-paced,
- Facilitator guided, or
- Formal classroom training.

Evaluation

- Each state should develop an evaluation procedure which addresses the level of competence desired before and after training is provided.

Irrigation Systems Planning

2. Surface Irrigation Systems

Reference Material

- NEH Part 652: National Irrigation Guide
 - i. Chapter 10: Conservation Management Systems and Irrigation Planning
 - ii. Chapter 15: Resource Planning and Evaluation Tools and Worksheets
- NEH Part 623: Irrigation
 - i. NEH 15 Chapter 4: Border Irrigation
 - ii. Part 623 Chapter 4 DRAFT: Surface Irrigation (04/2006)
 - iii. NEH 15 Chapter 5: Furrow Irrigation
- Applicable State Irrigation Guides.
- "Management of Farm Irrigation Systems", ASAE Monograph, 2007.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

Toolbox Material

- Publication "Planning for an Irrigation System", AAVIM Manual,
- Publication "The Surface Irrigation Manual" ITRC.
- Publication "Design and Operation of Farm Irrigation Systems" ASABE Monograph. 2007
- Video 003 "Conservation Irrigation for New Employees", NRCS, Module 7.3
 - i. Part A (20:41)
 - ii. Part B (7:47)
 - iii. Part C (19:04)
 - iv. Part D (15:42)
 - v. Part E (13:10)
- Video 004 "Best Management Practices For Sediment Reduction Within Western Stanislaus County", NRCS, CA (16:50)
- Video 005 "No Water - No Future, Key to Effective Water Management", Irrigation Association. (15:14)

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3. Trickle Irrigation Systems

Reference Material

- NEH Part 652: National Irrigation Guide
 - i. Chapter 10: Conservation Management Systems and Irrigation Planning
 - ii. Chapter 15: Resource Planning and Evaluation Tools and Worksheets
- NEH Part 623: Irrigation
 - i. NEH 15 Chapter 4: Border Irrigation
 - ii. Part 623 Chapter 4 DRAFT: Surface Irrigation (04/2006)
 - iii. NEH 15 Chapter 5: Furrow Irrigation
- Applicable State Irrigation Guides.
- "Management of Farm Irrigation Systems", ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

Toolbox Material

- Publication "Drip and Microirrigation for Trees , Vines, and Row Crops", ITRC, Cal-Poly
- Publication "Planning for an Irrigation System", AAVIM Manual.
- Video 003 "Conservation Irrigation for New Employees", NRCS, Module 7.3
 - i. Part A (20:41)
 - ii. Part B (7:47)
 - iii. Part C (19:04)
 - iv. Part D (15:42)
 - v. Part E (13:10)

- Video 004 "Best Management Practices For Sediment Reduction Within Western Stanislaus County", NRCS, CA (16:50)
- Video 005 "No Water - No Future, Key to Effective Water Management", Irrigation Association. (15:14)
- Video 010 "Sand Media Filtration for Drip and Microirrigation", ITRC, Cal-Poly (50:30)
- Video 011 "General Filtration for Drip and Microirrigation", ITRC, Cal-Poly (50:27)

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4. Subsurface Irrigation Systems

Reference Material:

- NEH Part 652: National Irrigation Guide
 - i. Chapter 10: Conservation Management Systems and Irrigation Planning
 - ii. Chapter 15: Resource Planning and Evaluation Tools and Worksheets
- NEH 16, Drainage (Will be replaced by NEH Part 624, Water Table Control).
- NEH Part 624 Chapter 10: Water Table Control
- Applicable State Irrigation Guides .
- "Management of Farm Irrigation Systems", ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

Toolbox Material

- Publication "Planning for an Irrigation System", AAVIM Manual.
- Video 003 "Conservation Irrigation for New Employees", NRCS, Module 7.3
 - i. Part A (20:41)
 - ii. Part B (7:47)
 - iii. Part C (19:04)
 - iv. Part D (15:42)
 - v. Part E (13:10)
- Video 004 "Best Management Practices For Sediment Reduction Within Western Stanislaus County", NRCS, CA (16:50)
- Video 005 "No Water - No Future, Key to Effective Water Management", Irrigation Association. (15:14)

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Irrigation Systems Planning

5. Fertigation/Chemigation Planning

Reference Material

- NEH Part 652: National Irrigation Guide
 - i. Chapter 7: Farm Distribution Components
 - ii. Chapter 10: Conservation Management Systems and Irrigation Planning
 - iii. Chapter 15: Resource Planning and Evaluation Tools and Worksheets
- NEH 15 Chapter 7: Trickle Irrigation
- NEH 15 Chapter 11: Sprinkle Irrigation
- Applicable State Irrigation Guides.
- Applicable State Chemigation/Fertigation Guides.
- "Management of Farm Irrigation Systems", ASAE Monograph, 1990.
- Field Office Technical Guide, Section 3 and 5.
- National Conservation Planning Handbook.

Toolbox material

- Publication "Drip and Microirrigation for Trees, Vines, and RowCrops", ITRC, Cal-Poly, Chapter 15,
- Publication "Fertigation", Irrigation Training and Research Center
- Publication "The Surface Irrigation Manual", Chapter 22. ITRC.
- Publication "Sprinkler Irrigation Systems", Chapter 8. Mid West Plan Service, MWPS-30

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Irrigation Systems Planning

Overview

Contents of Toolbox

Publications

- Publication "Drip and Microirrigation for Trees, Vines, and Row Crops", ITRC, Cal-Poly
- Publication "Fertigation", ITRC, Cal-Poly
- Publication "Planning for an Irrigation System", Irrigation Association
- Publication "The Surface Irrigation Manual", Chapter 1, ITRC
- Publication "Design and Operation of Farm Irrigation Systems" ASABE Monograph
- Publication "Sprinkler Irrigation Systems", Mid West Plan Service, MWPS-30

Videos

- Video 003 "Conservation Irrigation for New Employees", NRCS, Module 7.3
 - i. Part A (20:41)
 - ii. Part B (7:47)
 - iii. Part C (19:04)
 - iv. Part D (15:42)
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