The 2009 NRCS Irrigation Toolbox

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Abstract. *The original NRCS Irrigation Training Toolbox was created in 1997. It consisted of two large cardboard boxes that contained much of the best of the available irrigation documents, books and videos that existed at that time. The 2009 release of the renamed NRCS Irrigation Toolbox has updated many of the documents and added many more. The Irrigation Toolbox now includes a search engine, and is entirely electronic. The NRCS Irrigation Toolbox is delivered on DVD, SD drives and flash drives.*

Keywords. irrigation, toolbox, resource, video, PowerPoint, extension document, training.

Introduction

The original NRCS Irrigation Training Toolbox was developed in 1997 by a team of NRCS irrigation engineers; it consisted of a collection of the best irrigation information available at that time. The primary purpose of the toolbox was to assist NRCS employees to develop training sessions. It included books, VHS videotapes, and extension documents. It also included irrigation lesson plans that could be adopted as is, or modified for a particular state or area.

The source of the documents was varied. Many of the documents were produced by NRCS, but most of the information was produced by state extension offices and universities. The NRCS purchased about 100 copies of each item in the toolbox. Books, videos, and training course materials were organized into chapters and put into two cardboard boxes.

The Irrigation Training Toolbox was distributed to each NRCS state water management engineer in all 50 states. A number of states received more than one toolbox. Many partners of the NRCS also received a toolbox. Occasionally, as money for new items was obtained, the items were purchased and distributed.

Over the years, the contents were often removed from the boxes and scattered. As personnel changed, many forgot about the existence of the toolbox, and found other sources for irrigation related information and training materials. Additionally, much of the technology that was used in the toolbox became obsolete. This is not to say that the information necessarily became outdated, but that the delivery mechanism of the technology did. For example, the Irrigation Training Toolbox contained about 30 VHS video cassettes. Some of the original VHS videotapes were replaced by DVDs, but most remained in the toolbox as videotapes.

The 2009 NRCS Irrigation Toolbox

Recently, water management engineers at Natural Resources Conservation Service decided that the original Irrigation Training Toolbox needed updating. The technology advancements in the past 12 years made it possible to make the toolbox even more functional than ever. Specifically, digitizing the contents of the toolbox allow effective searches to be conducted. The videos were reformatted so that they can be played on desktop or laptop computers. Additional information was included so that the irrigation technology is up-to-date.

The size of the Toolbox has been limited to 3.75 Gigabytes so that it can be delivered on a standard DVD. In addition, other copies of the Toolbox are delivered on SD cards and flash drives.

In the future, the Toolbox will be updated on an online site where NRCS employees can download the entire toolbox and copy it to their preferred storage device. The current storage limit of 3.75 GB will certainly be increased as the cost of storage continues its decline.

Contents

The NRCS Irrigation Toolbox contents have been placed in a web-like format. The user accesses the contents through a set of html pages. Most content is in pdf format.

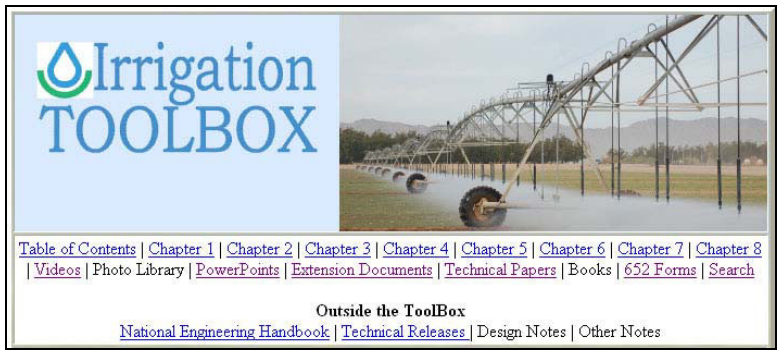


Figure1. The NRCS Irrigation Toolbox “Header”

Videos

The most pressing issue for the 1997 version of the Toolbox was the increasingly obsolete VHS format of the excellent videos. Finding a VCR player in NRCS field offices

is increasingly difficult. The existing videos were re-formatted in flash, and can be viewed within the user's internet browser. The flash format also allows the 30 hours of video in the Toolbox to be placed on one DVD.

Search Engine

Another significant advantage of the electronic version of the Toolbox is the ability to do a search. It is typical that people forget about the resources in their own office. In the age of Google, finding information has becoming vastly simpler, but that implies that the information is already digitized and indexed.

Zoom Search Engine 5.1, a third party search engine, was purchased and installed, so that all of the documents can be found using the search page. The documents were indexed with the Zoom search engine, and the index files added to the Toolbox. The search engine can index many types of files, and returns both the file's title and description, and also the context of the word "hit".

The search engine uses an algorithm to determine the document's score, and the documents with the highest score are placed first. A high score represents the fact the search words occur frequently, and extra weight is given if a search word occurs in the document title.

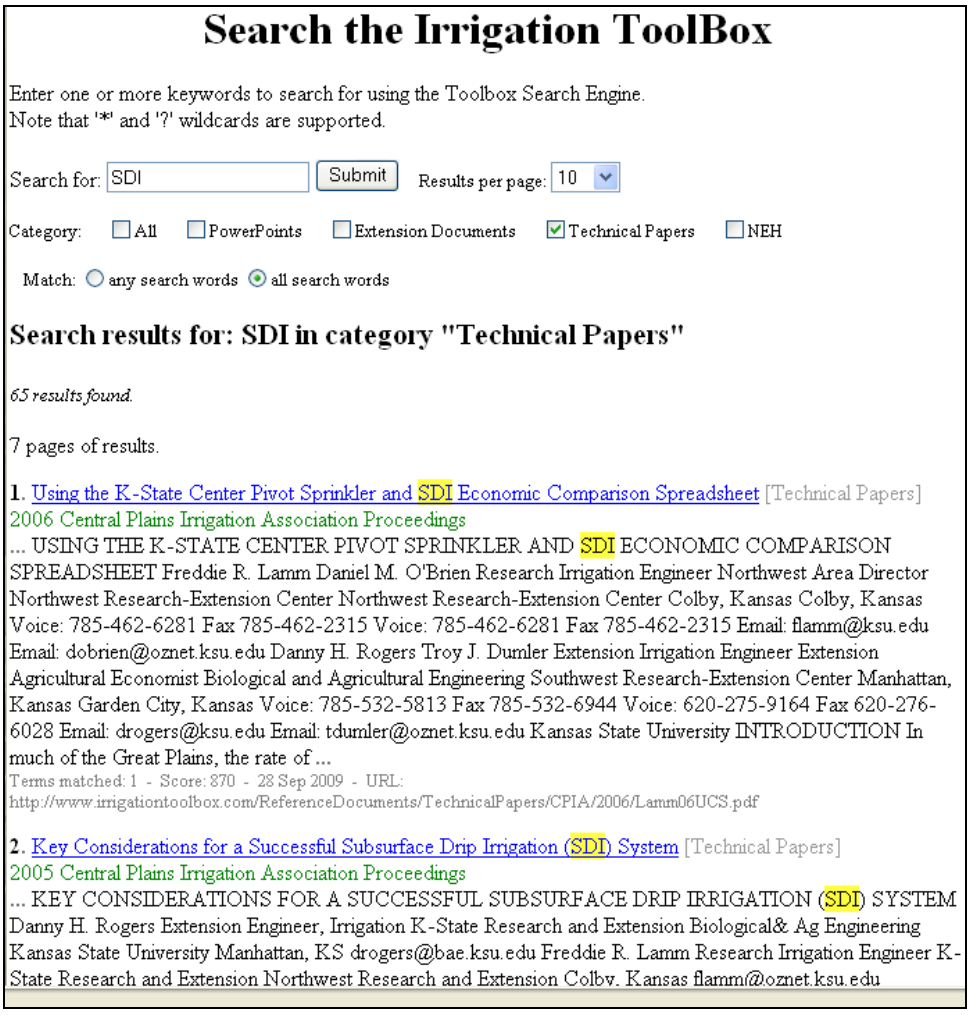
The search page allows the user several options. For example, the user can choose to search only specific sections of the Toolbox. These sections include:

- Technical Papers
- Power Points
- Extension Documents
- NRCS National Engineering Handbook

In addition, the user can search the entire contents of the toolbox. Conventions typical for most search engines are used in the Toolbox. For example, quotes indicate that the exact phrase must be found.

The Zoom search engine can be configured so that it works while installed on external drives like DVDs, SD cards, and flash drives. The Irrigation Toolbox is fully functional without an internet connection, and in the case of an SD card or DVD, can remain inside a laptop.

Searching the large amount of NRCS produced irrigation information, extension documents, and technical papers from the Irrigation Association and Central Plains Irrigation Association allows NRCS employees to find answers to very specific irrigation questions. It also introduces the employee to new sources of information.



Search the Irrigation ToolBox

Enter one or more keywords to search for using the Toolbox Search Engine.
Note that '*' and '?' wildcards are supported.

Search for: SDI Submit Results per page: 10

Category: All PowerPoints Extension Documents Technical Papers NEH

Match: any search words all search words

Search results for: SDI in category "Technical Papers"

65 results found.

7 pages of results.

1. Using the K-State Center Pivot Sprinkler and SDI Economic Comparison Spreadsheet [Technical Papers]
2006 Central Plains Irrigation Association Proceedings
... USING THE K-STATE CENTER PIVOT SPRINKLER AND SDI ECONOMIC COMPARISON SPREADSHEET Freddie R. Lamm Daniel M. O'Brien Research Irrigation Engineer Northwest Area Director Northwest Research-Extension Center Northwest Research-Extension Center Colby, Kansas Colby, Kansas Voice: 785-462-6281 Fax 785-462-2315 Voice: 785-462-6281 Fax 785-462-2315 Email: flamm@ksu.edu Email: dobrien@oznet.ksu.edu Danny H. Rogers Troy J. Dumler Extension Irrigation Engineer Extension Agricultural Economist Biological and Agricultural Engineering Southwest Research-Extension Center Manhattan, Kansas Garden City, Kansas Voice: 785-532-5813 Fax 785-532-6944 Voice: 620-275-9164 Fax 620-276-6028 Email: drogers@ksu.edu Email: tdumler@oznet.ksu.edu Kansas State University INTRODUCTION In much of the Great Plains, the rate of ...
Terms matched: 1 - Score: 870 - 28 Sep 2009 - URL:
http://www.irrigationtoolbox.com/ReferenceDocuments/TechnicalPapers/CPIA/2006/Lamm06UCS.pdf

2. Key Considerations for a Successful Subsurface Drip Irrigation (SDI) System [Technical Papers]
2005 Central Plains Irrigation Association Proceedings
... KEY CONSIDERATIONS FOR A SUCCESSFUL SUBSURFACE DRIP IRRIGATION (SDI) SYSTEM Danny H. Rogers Extension Engineer, Irrigation K-State Research and Extension Biological& Ag Engineering Kansas State University Manhattan, KS drogers@bae.ksu.edu Freddie R. Lamm Research Irrigation Engineer K-State Research and Extension Northwest Research and Extension Colby, Kansas flamm@oznet.ksu.edu

Figure 2. The NRCS Irrigation Toolbox "Search Page"

Technical Papers

The Irrigation Association and the Central Plains Irrigation Association generously granted the NRCS Irrigation Toolbox the electronic rights to their technical papers. These papers contain a wealth of information including research, application, and experience in the field of irrigation. Importantly, the Toolbox allows the user to search only these technical papers, excluding the rest of the toolbox, so that the user can find information that is specifically included in any technical paper.

Extension Documents

The Toolbox also includes many of the best of the extension documents that are available online. These extension documents have been developed by the various state extension offices. In most cases, these documents were indexed using the version downloaded from its host site. In some cases, however, the extension document was security protected so that indexing was not allowed. In these cases, a printout of the extension document was scanned, and that new document was indexed. This requires

that the new, copied document be placed temporarily in the Toolbox. After indexing, the original, security protected document was then put back in the Toolbox so that the user can access only the original, security protected document.

Photo Library

The Irrigation Toolbox includes over 400 high quality digital photographs taken by NRCS employees. The photos are included so that custom PowerPoint slide shows can be developed. Additionally, the photos are often educational in their own right. They include photos taken at site visits around the country, and show the variety of irrigation systems found in the United States. The slides include many of the various permutations of center pivot and micro irrigation systems. Additionally, it includes a set of photographs of irrigation related appurtenances.

Figure 3. Page from the NRCS Irrigation Toolbox Photo Library

PowerPoint Slideshows

Over the years, many NRCS irrigation engineers have developed PowerPoint sideshows for training. The Irrigation Toolbox has a total of 55 irrigation related Power Points sideshows. The subject matter ranges from irrigation scheduling to developing a water management plan. The intent is to allow other NRCS employees to either use or modify these existing PowerPoint presentations.

Lesson Plans

The original toolbox was designed to be used by trainers as they developed local training sessions for NRCS employees. The original lesson plans have been updated and organized into chapters. The chapter subjects are:

1. Soil-Water-Plant Relationship
2. Irrigation System Planning
3. Irrigation System Design
4. Water Measurement
5. Irrigation Scheduling
6. Soil Moisture Measurement
7. Irrigation Water Management
8. Irrigation System Evaluation

Accessing the Information

The Irrigation Toolbox is designed to allow the user to find information easily. Much of the information is listed on two different pages: the subject (chapter) page and the "Type of Information" page. For example, an extension document on using tensiometers for irrigation scheduling would be listed in the chapter on Irrigation Scheduling, and also in the Extension Document page. Finally, the document could be found by using the search engine.

Conclusion

The Natural Resources Conservation Service (NRCS) is the lead agency of the United States Department of Agriculture charged with carrying out the Department's conservation mission on private lands. Assisting landowners with irrigation will continue to be a major focus of the agency in the future. The ability to access accurate information on irrigation is critical to NRCS employees at all levels. The 2009 NRCS Irrigation Toolbox is a product that the agency believes will fill the need of employees for high quality irrigation information and training materials.

Acknowledgements

The NRCS wants to acknowledge all those organizations and individuals that consented to have material they developed included in the NRCS Irrigation Toolbox. Also, NRCS water management engineers who worked on the Toolbox but are not listed as authors of this paper include Ronald Gronwald, Tony Stevenson, and Jerry Walker.