

Drought Introduction

Drought Overview
Drought Monitoring and Mitigation
Climate and Weather Information
Drought Financial Assistance

Drought Overview

- Drought and Weather
National Agricultural Library
www.nal.usda.gov/wqic/drought.html
List of links to programs and bibliography of reports and research papers on drought.
- **Drought Management on Farmland**
Witmore, J.S. 1995. Water Science and Technology Library.
Kluwer Academic Publishers. Dordrecht.
- **Amber Waves: A Sourcebook for Sustainable Dryland Farming in the Northwestern United States.**
Granatstein, David. 1992. XB 1025. College of Agriculture and Home Economics Research Center, Washington State University. Pullman, WA. 82 p.
Chapters cover moisture management, soil quality, crop rotations in dryland farming, moisture management, and a resource guide to dryland farming in the northwest U.S.
- **Jornada Experimental Range**
USDA Research Station, New Mexico State University.
usda-ars.nmsu.edu/
Research on the ecology and ecosystem management of semi-arid range environments.
- **SAHRA – Sustainability of Semi-Arid Hydrology and Riparian Areas**
www.sahra.arizona.edu/
Multidisciplinary, collaborative program promoting the sustainable management of water resources in semi-arid regions, through stakeholder-driven interdisciplinary research, aggressive public outreach, and strong education initiatives.
- **International Arid Lands Consortium**
ialcworld.org/
Promotes cooperative research and practical application of new knowledge to develop sustainable ecological practices for arid lands.
- **Management of Agricultural Drought**
Saxena, N.P. (ed.) 2003. Science Publishers, Inc. Plymouth, UK.
- **The Performance of Organic and Conventional Cropping Systems in an Extreme Climate Year.**
Lotter, D.W., R. Seidel, and W. Liebhardt. 2003. American Journal of Alternative Agriculture. Vol. 18 No. 3.
Describes how higher water intake by organically managed soil, compared to conventionally managed soils, resulted in significantly greater corn and soybean yields. It also promoted greater weed growth.

Drought Monitoring and Mitigation

- **National Drought Mitigation Center**
University of Nebraska – Lincoln
www.drought.unl.edu/index.htm
Provides information on monitoring, mitigating, planning for drought and understanding your risks for drought conditions. Numerous links to technical and financial assistance programs and weather information from around the country Also includes contact information for state drought coordinators and government organizations involved in drought monitoring and mitigation.
- **Defending Against Drought**
USDA Natural Resources Conservation Service
www.nrcs.usda.gov/feature/highlights/drought.html
Links to maps of drought-monitor Web pages and current drought conditions throughout the U.S.
- **National Water and Climate Center**
USDA Natural Resources Conservation Service
www.wcc.nrcs.usda.gov/wcc.html
Weekly report on snowpack and drought conditions. Links to Soil Climate Analysis Network sites across the U.S.
- **Stream and Groundwater Conditions**
US Geological Survey
water.usgs.gov/waterwatch/index.html
waterdata.usgs.gov/nwis/current/?type=gw
Current water resources conditions and links to stream-flow data listed by state
- **Soil Moisture Monitoring**
National Oceanic and Atmospheric Administration
www.cpc.ncep.noaa.gov/soilmst/
Soil moisture and runoff maps at the scale of the entire U.S.
- **Surf Your Watershed**
U.S. Environmental Protection Agency
www.epa.gov/surf/
Watershed indicators and stream flow listed by watershed

Climate and Weather Information

- **National Weather Service**
weather.gov/
Weather conditions, advisories, and warnings for locations across the U.S.
- **Climate Data**
National Climate Data Center
lwf.ncdc.noaa.gov/oa/climate/research/monitoring.html
Links to current and historical climate data, drought maps, snow pack, and weather trends
- **National Oceanic & Atmospheric Administration – Drought Information Center**
www.drought.noaa.gov/
Drought severity maps, monthly precipitation indices, soil moisture maps, crop moisture indices, and drought indicator assessments
- **National Drought Information**
www.wagwx.ca.uky.edu/drought.html

- Weather forecasts by county and city for locations across the U.S.*
- **National Weather Service – Climate Prediction Center**
www.cpc.ncep.noaa.gov/index.html
Access to drought monitoring information and indicators
 - **NOAA/USDA-Weekly Weather and Crop Bulletin**
www.usda.gov/oce/waob/jawf/wwcb.html
State summaries of weather forecasts and impacts on crop production
 - **Regional Climate Centers**
www.wrhn.noaa.gov/wrhq/nwspage.html
Provides weather information, river levels, hazardous conditions, and weather emergency preparedness information for weather stations across the country

Drought Financial Assistance

- **Federal Disaster Assistance for Farmers**
www.flaginc.org/pubs/publist.htm#FGDA
Order form for publication by the Farmers' Legal Action Group, Inc.
- **What to do Before You Call for Federal Disaster Relief**
www.ag.uiuc.edu/%7Edisaster/facts/relief.html
- **Farm Service Agency Online**
www.fsa.usda.gov/pas/disaster/default.htm
Disaster Assistance programs in the event of floods, drought, or severe storms
Catalogue of Federal Drought Assistance Programs
www.fsa.usda.gov/indc/programs.pdf
National Drought Council
www.fsa.usda.gov/indc/
Emergency Loan Program Factsheet
www.fsa.usda.gov/pas/publications/facts/html/emer02.htm
Disaster Debt Set-Aside Program
www.fsa.usda.gov/pas/publications/facts/html/debtset02
Hay Net
www.fsa.usda.gov/haynet/
Venue for the exchange of information regarding sources of and needs for hay in the event of drought
Non-Insured Crop Disaster Insurance Program
www.fsa.usda.gov/pas/publications/facts/html/nap99.htm
- **USDA Drought Information and Assistance**
drought.fsa.usda.gov/
Provides links to information and maps to assist in drought preparedness
- **USDA Disaster Assistance**
www.usda.gov/news/disaster/index.htm
Federal programs that provide assistance in the event of a declared disaster
- **Federal Emergency Management Agency**
www.fema.gov
Lists active disaster areas and assistance available to people affected by proclaimed disasters
- **Texas Drought Resource Information Packet:**
www.agr.state.tx.us/producer%5Finfo/hay%5Fgrazing/drought.pdf

A comprehensive list of resources, some specific to Texas, but many federal or national in scope: good information on the environmental, social, and economic costs of droughts as well as diagrams outlining processes used to declare an emergency

- **Drought Financial Management**

ag.arizona.edu/extension/drought/financial.html

Financial management information and worksheets for livestock producers

- **Tax Issues after a Drought**

North Dakota State University

www.ag.ndsu.nodak.edu/drought/taxes.htm

Guidelines for crop loss and livestock sales.

Soil Management

ATTRA Publications

Soil Quality

Soil Management for Water Conservation

Cover Crops and Cover Cropping Practices

Conservation Tillage

Alternatives to Summer Fallow

Water-Use Efficient and Drought-Tolerant Crops

Planting and Drought

Pest Management & Drought

Horticultural Crops & Drought

ATTRA Publications

- *Soil Management*
 - Drought Resistant Soils
 - Sustainable Soil Management
 - Alternative Soil Amendments
 - Farm-Scale Composting Resource List
- *Tillage and Crop Management*
 - Pursuing Conservation Tillage for Organic Crop Production
 - Conservation Tillage
 - Overview of Cover Crops and Green Manures
 - Rye as a Cover Crop
- *Pasture Soil Management*
 - Sustainable Pasture Management
 - Assessing the Pasture Soil Resource
 - Nutrient Cycling in Pastures
 - A Brief Overview of Nutrient Cycling in Pastures
 - Managed Grazing in Riparian Areas
 - Protecting Riparian Areas

Soil Quality

- **Soil Quality. Managing Soil for Today and Tomorrow**
 - USDA Natural Resources Conservation Service
 - soils.usda.gov/sqi/
 - Soil quality technical notes for agronomic and rangeland production practices: documents addressing the benefits of sod-based rotations and relationships between soil biology and land management*
- **Healthy Soils**
 - Agriculture and Agri-Food Canada
 - www.agr.gc.ca/pfra/land/practices_e.htm.
 - Beneficial practices that conserve soil quality. Includes soil management practices to reduce the impacts of stress conditions, such as drought.*

- **Building Soils for Better Crops.**
Magdoff, Fred, and Harold van Es. 2000. Second Edition. SAN. Beltsville, MD.
www.sare.org/publications/bsbc/bsbc.pdf
Available from SAN for \$19.95. www.sare.org/publications/index.htm
Contains detailed information about soil structure and the management practices that affect soils, as well as practical information like how to interpret soil test results.
- **Soil Biological Communities**
Bureau of Land Management / National Sciences and Technology Center
www.blm.gov/nstc/soil/index.html
Provides a detailed and illustrated description of the soil food web and roles played by various microorganisms in the soil.
- **Interpreting Indicators of Rangeland Health. Rangeland health indicators.**
Pellant, Mike, Patrick Shaver, David A. Pyke, and Jeffrey E. Herrick. 2000. Version 3. 1734-6. United States Department of the Interior, Bureau of Land Management, National Science and Technology Center, Information and Communications Group. Denver, CO. 111 p.
www.or.blm.gov/Vale/Range/InterpretingIndicatorsofRangeHealthTechReference1734-6%202000.pdf
Indicators for monitoring the soil and forage health of rangelands. Includes erosion indicators, soil compaction, plant diversity, plant litter over soil surface, invasive plants, and plant productivity.

Soil Management for Water Conservation

- **Organic Crop Production: Soil Conservation Practices**
Agriculture, Food and Rural Revitalization. Saskatchewan, Canada. 1996.
www.agr.gov.sk.ca/docs/organics/research/organicsoil.asp
Describes use of conservation tillage practices, extended crop rotations, wind barriers, and green manure crops as methods for protecting soil against erosion, increasing soil water-holding capacity, and enhancing soil health.
- **Technologies affecting soil water. Chapter VIII- Water-Related Technologies for Sustainable Agriculture in U.S. Arid/Semiarid Lands**
Office of Technology Assessment. OTA-F-212. Washington D.C. October 1983.
www.wws.princeton.edu/cgi-bin/byteserv.prl/~ota/disk3/1983/8331/833102.PDF
Discusses soil types in arid regions, mulching, conservation tillage, development of saline seeps, irrigation, and leaching practices.
- **Soil and Water Conservation in Semi-Arid Areas**
Hudson, Nornan. W. 1987. Silsoe Associates, Amptill, Bedford, United Kingdom.
FAO Land and Water Development Division. Food and Agriculture Organization of the United Nations, Rome
www.fao.org/docrep/T0321E/t0321e00.htm
Describes and illustrates methods of soil and water conservation appropriate for arid areas. Oriented towards practices in tropical areas of lesser-developed countries. However, principles are applicable to small-scale agricultural practices in the U.S.
- **Managing Soils to Achieve Greater Water Use Efficiency: A Review**
Hatfield, Jerry L., Thomas J. Sauer, and John H. Prueger. 2001. Agronomy Journal. Volume 93. No. 2. p. 271-280.
agron.scijournal.org/cgi/content/abstract/93/2/271

Addresses methods for increasing water use efficiency through tillage, the adoption of more intensive cropping systems in semiarid environments, increased plant populations in more temperate and humid environments, and by modifying nutrient management practices.

Cover Crops and Cover Cropping Practices

- **Managing Cover Crops Profitably**
Sustainable Agriculture Network. 2nd Edition. 1998. SAN. Beltsville, MD.
www.sare.org/publications/covercrops/covercrops.pdf
Also available from SAN for \$19.
www.sare.org/publications/index.htm
Describes 20 cover crops, their use, planting range, and management.
- **Summer Cover Crops**
Cramer, N.G. 1999. North Carolina State University.
Horticulture Information Leaflets.
www.ces.ncsu.edu/depts/hort/hil/hil-37.html
Describes use of cover crop crops in vegetable production systems and benefits they provide to enhancing soil organic matter, decreasing erosion, reducing weed growth, and facilitating nutrient recycling.
- **Cover Crops for Vegetable Growers**
Marr, Charles W., Rhonda Janke, and Paul Conway. 1998.
Commercial Vegetable Production. Kentucky State University.
www.oznet.ksu.edu/library/hort2/MF2343.PDF
A detailed production and management guide to the selection and use of cover crops for soil and fertility management in organic vegetable production systems.
- **Selecting the Right Cover Crop Gives Multiple Benefits**
Ingels, Chuck A., Mark Van Horn, Robert L. Bugg, and P. Rick Miller. 1994.
California Agriculture. Vol. 48, No. 5. p. 43-48.
www.sarep.ucdavis.edu/ccrop/CCPubs/SelectingCoverCrop.html
Describes benefits of cover crop in nutrient cycling and pest management but warns that cover crops can compete with the main crop for soil water. Discusses how to choose appropriate cover crops for cropping system.
- **Cover Crops in Agriculture: An Old New Concept**
USDA Agricultural Research Service. Sustainable Agricultural Systems.
www.ba.ars.usda.gov/sasl/research/covercrops.html
Describe nutrient management and weed suppression benefits of cover crops and discusses methods for managing and terminating the growth of cover crops for use with minimum tillage practices. Also describes common cover crops and how to choose species appropriate for your production practices.
- **UC SAREP Cover Crops Resource Page**
University of California. Sustainable Agriculture Research and Education Program.
www.sarep.ucdavis.edu/ccrop
Includes a searchable cover crop database and two cover cropping slide shows, one on cover cropping in vineyards and orchards and the other on cover cropping in row and filed crop systems.

Conservation Tillage

- **Crop Residue Management**
Conservation Tillage Information Center. Purdue University.
www.ctic.purdue.edu/CTIC/Catalog/CropResidueManagement.html
List of publications, contacts, and other resources on conservation tillage methods and crop residue management
- **Tillage Techniques that can Save Moisture**
Franzen, Dave. 1997. Drought Strategies. DS-4-97.
North Dakota State University Extension Service. Fargo, ND.
www.ag.ndsu.nodak.edu/drought/ds-4-97.htm
Impact of different tillage methods on amount of moisture lost to evaporation.
- **Conservation Tillage Offers New Hope**
DeQuattro, Jim. 1997. Sustaining agriculture in drought years.
Agricultural Research. January 1997. p. 4-9.
www.ars.usda.gov/is/ar/archive/jan97/sustain.pdf.
Profiles Texas farmers who maintained crop yields during droughts by implementing conservation tillage practices.
- **Reduced Tillage Systems for Arizona Cotton Growers**
Coates, Wayne E., and Gary W. Thacker. 1996. The University of Arizona Cooperative Extension Service. Tucson, AZ.
www.ag.arizona.edu/crops/equipment/reducedtillage.html
Uprooter-shredder-mulcher and stalk puller conservation tillage practices were compared to conventional tillage practices. The alternative methods conserved energy and soil resources while producing similar cotton yields to the conventional method.
- **Zero-Till Shines in Drought**
Lenssen, Andy, Bill Grey, Sue Blodgett, and Greg Johnson. 2003. University News for Montana State University. Bozeman, MT.
www.montana.edu/commserv/csnews/nwview.php?article=758
Studies conducted on dryland wheat cropping systems determined that diverse crop rotations can improve spring wheat yield and quality, while a combination of diverse crop rotations and zero-tillage can help manage weeds and diseases and leave sufficient after-harvest residue to protect the soil from wind and water erosion.
- **Proceedings of AERO's Soil-Building Cropping Systems**
Hilander, Sally K. (ed.). 1989. Alternative Energy Resources Organization. Lewistown, MT. 55 p.
Short presentations on conservation tillage, crop residue management, alternatives to summer fallow, and moisture capture and conservation practices applicable to the arid northern and western states.

Alternatives to Summer Fallow

- **Making the Most of Limited Water**
Brandt, S.A., B.G.M. Conkey, and H.W. Cutforth. 1998. Agriculture and Agri-Food Canada. Saskatchewan Soil Conservation Association.
ssca.usask.ca/97-Proceed/Brandt.htm
Recommends leaving stubble on soil surface to catch and retain snowfall and enhance water infiltration. Also notes that proper fertilization of crops increases water use efficiency.

- **Water Use in a Modified Summer Fallow System on Semiarid Northern Great Plains**
Aase, J.K., J.R. Pikul., and L. Joseph. Agricultural Research Service. Tektran.
www.nal.usda.gov/ttic/tektran/data/000009/77/0000097744.html
A comparison of various forage, bean, and oilseed crops indicated that annual forages had the highest water use efficiency while, sunflower and safflower had the lowest.
- **Soil Water Storage in Dryland Cropping Systems: The significance of cropping intensification**
Farahani, H.J., G.A. Peterson, D.G. Westfall, L.A. Sherrod, and L.R. Ahuja. 1998. Soil Science Society of America Journal. Vol. 62. p. 984-991.
Research showed that growing corn or sorghum during the summer increased water use efficiency over summer fallow practices in winter wheat production systems.
- **Dryland Cropping Intensification: A fundamental solution to efficient use of precipitation**
Farahani, H.J., G.A. Peterson, D.G. Westfall. 1998. Advances in Agronomy. Vol. 64. p. 197-223.
Detailed discussion of the impact of substituting summer produced crops for summer fallows on soil moisture and efficiency of water use.

Water-Use Efficient and Drought-Tolerant Crops

- **Water-Use Efficiency of Canola in Victoria**
Grey, D. n.d. Agriculture Victoria, Rutherglen.
www.csu.edu.au/special/agronomy/papers/181/181.html
- **Alternative Crops during a Drought**
North Dakota State University.
www.ag.ndsu/nodak.edu/drought/altcrops.htm
Meeting forage and grain needs in an emergency.
- **Sunflower: An efficient water user**
National Sunflower Association.
www.sunflowerusa.com/magazine/archive_details.asp?Cat=11
- **Drought Planning and Management**
Sustainable Management of Rangeland Resources
University of Wyoming Cooperative Extension Service
www.wyorange.net/
Links to information about sorghum, Sudan grass, and foxtail millet as water use efficient forages

Low Water-Use and Drought-Tolerant Plants

- **University of Arizona**
ag.arizona.edu/OALS/oals/dru/LWUintro.html
- **Coping with Watering Restrictions in the Landscape**
Wade, Gary L. University of Georgia College of Agricultural & Environmental Sciences Cooperative Extension Service
pubs.caes.uga.edu/caespubs/horticulture/Drought.html
- **Low Water Use Plants for Kansas Landscapes**
Kansas State University
www.oznet.ksu.edu/library/hort2/mf2067.pdf

- **List of Drought Tolerant Annuals**
University of Maryland
www.agnr.umd.edu/ipmnet/02WMdry.pdf

List of Drought Tolerant Plants

- **University of Massachusetts**
www.umassgreeninfo.org/fact_sheets/plant_culture/drought_tolerant_plants.pdf
- **Drought Tolerant Plants for North Carolina Landscapes**
Powell, M.A., and T.M. Disy. 1996. North Carolina Cooperative Extension Service, AG 508-3.
www.bae.ncsu.edu/programs/extension/publicat/wqwm/ag508_3/
- **Drought Tolerant Plants of the Pacific Northwest**
www.molbaks.com/infopages/drought.pdf

Planting and Drought

- **Dry Spring Conditions, Considerations before Deciding to Replant**
Ransom, Joel K. 2003. DS-6-97. Drought Strategies. North Dakota State University Extension Service. Fargo, ND.
www.ag.ndsu.nodak.edu/drought/ds-6-97.htm
- **Dry Seedbeds Require Special Tactics, or Rain**
Berglund, Duane. 2003. Drought Strategies. North Dakota State University Extension Service. Fargo, ND.
www.ag.ndsu.nodak.edu/drought/planting.htm
- **Soil Management following Drought**
New South Wales, Australia AgNote.
www.agric.nsw.gov.au/reader/5860
Fertilization, tillage, and pasture management to protect soils and enhance their productivity during and after drought conditions.

Pest Management & Drought

- **Water Conservation, Weed Control Go Hand in Hand**
Parker, Robert. 2003. Drought Advisory. EM4856. Washington State University Cooperative Extension. Pullman, WA.
cru.cahe.wsu.edu/CEPublications/em4856/em4856.pdf
Stresses impact of water competition by weeds on crop growth. Notes that pre-plant herbicides require moisture to be taken up by weeds and be effective in their action.
- **Drought-When Weeds Can Become Friends**
Zollinger, Richard. 2003. DS-20-97. Drought Strategies. North Dakota State University Extension Service. Fargo, ND.
www.ag.ndsu.nodak.edu/drought/ds-20-97.htm
Describes how weeds can be beneficial as an alternative forage and as a cover crop during times of drought.
- **Grasshopper Management under Drought Conditions**
North Dakota State University Extension Service. Department of Entomology. 2003. DS-1-97. Fargo. ND.
www.ag.ndsu.nodak.edu/drought/ds-1-97.htm

Horticultural Crops & Drought

- **Drought Management for Horticultural Crops**
Stein, Larry A. 1996. Aggie-Horticulture. Texas A & M University. College Station, TX.
aggie-horticulture.tamu.edu/plantanswers/drought/cropmgmt.html
- **Drought Advisory for Vegetable Crops**
Sorensen, Erik J. 2001. EM4830. Washington State University Cooperative Extension. Pullman, WA.
cru.cahe.wsu.edu/CEPublications/em4830/em4830.pdf
- **Drought Advisory for Vegetable Production**
Kee, Ed, Wilton Cook, Darbie Granberry, Herman Hohlt, and Doug Sanders. 1994. North Carolina Cooperative Extension Service. North Carolina State University, Raleigh, NC.
www.ces.ncsu.edu/disaster/drought/dro-13.html
- **Offsetting Drought for Small-Scale Vegetable Production**
Niedziela Jr., Carl E., Robert O. Evans, Douglas C. Sanders, and Wilfred R. Jester. 1994. AG-519-4. DRO-16. North Carolina Cooperative Extension Service. Raleigh, NC.
www.ces.ncsu.edu/disaster/drought/dro-16.html
- **Drought Management for Horticultural Crops**
Aggie-Horticulture. Texas A & M University. College Station, TX.
aggie-horticulture.tamu.edu/plantanswers/drought/cropmgmt.html
- **Drought Effects on Apple Trees**
Miller, Diane. 1999. Ohio Fruit ICM News. Volume 3 No. 27. p. 3-7.
www.ag.ohio-state.edu/~ipm/fruit/icm27.htm#linkg
- **Strawberry Renovation in a Drought**
Demchak, Kathy. 1999. Ohio Fruit ICM News. Vol. 3, No. 27. p. 3.
www.ag.ohio-state.edu/~ipm/fruit/icm27.htm#linkg
- **Texas SmartScape**
www.txsmartscape.com/frontpage.html
An interactive how-to guide for low-water landscaping. Also available as a CD.
- **Backyard Gardener. Drought Tolerant Plants**
www.backyardgardener.com/dry/

Irrigation

Irrigation Guides

Water Use Policy & Conflict Resolution

Irrigation and Water Quantity

Irrigation Water Quality

Water Harvesting

Irrigation Guides

- **Best Management Practices for Irrigation Management**
Waskom, Reagan M. 1994. Colorado State University Cooperative Extension. Ft. Collins, CO.
www.ext.colostate.edu/pubs/crops/xcm173.pdf
- **NRCS Irrigation Page**
USDA Natural Resources Conservation Service/National Water and Climate Center
www.wcc.nrcs.usda.gov/nrcsirrig/
- **Soil Water Monitoring and Measurement**
Ley, Thomas W., Robert G. Stevens, Richard R. Topielec, and W. Howard Neibling. 1994. Washington State University Cooperative Extension; Oregon State University Extension Service; the University of Idaho Cooperative Extension System, and the U.S. Department of Agriculture. PNW 475 A Pacific Northwest Publication.
cru.cahe.wsu.edu/CEPublications/pnw0475/pnw0475.html
- **A Ready Reference for Irrigation Manual of Practice**
Ronald E. Hermanson, and Peter Canessa. 1995. Washington State University Cooperative Extension. EB1810. Pullman, WA.
cru.cahe.wsu.edu/CEPublications/eb1810/eb1810.html
- **Irrigation Scheduling Checkbook Method**
Wright, Jerry. 2002. University of Minnesota.
www.extension.umn.edu/distribution/cropsystems/DC1322.html
Description of and examples for use of the checkbook method for scheduling irrigation.
- **Watertight**
Center for Irrigation Technology and Advanced Technology Information Network
California Agriculture Technology Institute. California State University, Fresno, CA
www.watertight.org/
An education and irrigation scheduling resource for water managers.
- **Determining a Framework, Terms and Definitions for Water Use Efficiency in Irrigation**
Barrett Purcell and Associates Pty Ltd. 1999. Land and Water Resources Research Corporation. Narrabri, NSW, Australia.
http://www.npird.gov.au/projects/finalrep_pdf/pdf/npirdframeworkweb.pdf

- **Irrigation Scheduling: Using Water-Use Tables**
Ashley, Roger O., William H. Neibling, and Bradley A. King. Bulletin CIS 1029. University of Idaho Cooperative Extension Service, Moscow, ID.
info.ag.uidaho.edu/resources/PDFs/CIS1039.pdf
- **Soil, Water, and Crop Characteristics Important to Irrigation Scheduling**
Evans, Robert, D. K. Cassel, and R. E. Sneed. 1996. Publication No. AG 452-1. North Carolina State University Cooperative Extension, Raleigh, NC.
www.bae.ncsu.edu/programs/extension/evans/ag452-1.html
- **Simple Irrigation Scheduling Using the Look and Feel Method**
Niederholzer, F., and L. Long. 1998. Simple Irrigation Scheduling Using the Look and Feel Method. Extension Service, Oregon State University. Corvallis, OR.
eesc.orst.edu/AgComWebFile/EdMat/EM8716.pdf
- **Micro-Irrigation Scheduling and Management**
Zoldoske, David F., and Kenneth H. Solomon. 1990. Center for Irrigation Technology. University of California. Fresno, CA.
cati.csufresno.edu/cit/rese/90/900606/
- **Introduction to Micro-Irrigation.**
Hla, Aung K., and Thomas F. Scherer, 1995. North Dakota State University Extension Service.
www.ext.nodak.edu/extpubs/ageng/irrigate/ae1243w.htm

Water Use Policy and Conflict Resolution

- **Western Water Laws**
jan.ucc.nau.edu/~zas/tarlock1.html
A technical paper on the history and implementation of water laws in the Western U.S.
- **Water Wars: Water Allocation Law – Apalachicola-Chattahoochee-Flint River Basin**
edis.ifas.ufl.edu/BODY_FE208
History of water allocation disputes in Florida and a discussion of methods used to address interstate water disputes.
- **Dividing the Waters: Water Marketing as a Conflict Resolution Strategy**
texaswater.tamu.edu/Resources/edwards-marketing.pdf?pubid=1588
A technical paper describing a water use conflict in Texas and how water marketing was used as a dispute resolution strategy.
- **Rangelands West**
rangelandswest.org/policy/policy.html
Rangeland policy issues including conflict resolution strategies.
- **Morris K. Udall – U.S Institute for Environmental Conflict Resolution**
www.ecr.gov/
Services and training in environmental conflict resolution.
- **The Quivera Coalition**
www.quiviracoalition.org/
A sustainable ranching program involved in facilitating discussions between farmers, researchers, and environmentalists regarding land and water use in the Western U.S.
- **The Sustainable Rangelands Roundtable**
Colorado State University
sustainable.rangelands.cnr.colostate.edu/Roundtable_description.htm

A stakeholder discussion process that uses indicators to monitor forest and range conditions and recommend land use practices and policies.

- **Drought Mitigation – What states have tried**
www.earthscape.org/p1/ndmc05/ndmc05.html
A compilation of land management practices, conflict resolution techniques, legislation, and education programs used by states to address issues associated with droughts and water use conflicts.

Irrigation and Water Quantity

- **Irrigating for Maximum Economic Return with Limited Water**
Schneekloth, Joel P, Nancy A. Norton, Richard T. Clark, and Norman L. Klocke. 2001. Nebraska Cooperative Extension Service, Lincoln, NE.
ianrpubs.unl.edu/water/g1422.htm
- **Sustainable Irrigation Project**
Vossen, Paul. University of California Cooperative Extension.
cesonoma.ucdavis.edu/HORTIC/sust_irr_sc.pdf
- **Linking Drought and Long-term Water Scarcity to Food Security in the Four Corners States: A Food Policy Paper**
Nabhan, Gary, and Naima Taylor. 2004. Center for Sustainable Environments at Northern Arizona University.
unix.oit.umass.edu/~pvmfafs03/resources/WaterScarcityPolicyPaper.pdf
- **Priority List of Irrigation Research**
The Irrigation Association. 2000. Kansas State University Research and Extension.
www.oznet.ksu.edu/sdi/News/ResearchPriorities.htm

Irrigation Water Quality

- **Environmental Impact of Irrigation: A Review.**
Stockle, Claudio O. 2001. Washington Water Research Center. Washington State University.
www.swwrc.wsu.edu/newsletter/fall2001/IrrImpact2.pdf
- **Irrigation Water Quality Criteria.**
T.A. Bauder, T.A., G.E. Cardon, R.M. Waskom, and J.G. Davis. 2004. Colorado State University Cooperative Extension No. 0.506
www.ext.colostate.edu/pubs/crops/00506.html
- **Classification of Irrigation of Water Quality**
Johnson, Gordon, and Hailin Zhang. Oklahoma Cooperative Extension Service.
osuextra.com/pdfs/F-2401web.pdf
- **Water Quality Criteria for Irrigation**
Hoffman, Glenn J. 1997. University of Nebraska Cooperative Extension Service.
ianrpubs.unl.edu/irrigation/ec782.htm
- **Overcoming High Sodium in Soil and Irrigation Water**
Camberato, James J. 1999. Pee Dee Research and Education Center. Clemson University.
virtual.clemson.edu/groups/turforamental/irrigation.htm

- **Irrigation Water Quality Standards and Salinity Management Strategies**
Fipps, Guy. Texas Cooperative Extension. Texas A&M University.
lubbock.tamu.edu/irrigate/documents/2074410-B1667.pdf
- **Irrigation Water Quality: Critical Salt Levels for Peanuts, Cotton, Corn and Grain Sorghum.**
McFarland, Mark L., Robert G. Lemon, and Charles L. Strickler.
Texas Agricultural Extension Service. Texas A&M University.
lubbock.tamu.edu/WebCD/docs/newpeanut/irrigationwaterq77C.pdf
- **Irrigation Water Quality. Fertilizer Guide**
Vomocil, J.A., and J. Hart. 1998.
eesc.orst.edu/AgComWebFile/EdMat/FG76.pdf
- **Water Salinity and Crop Yield**
Hill, Robert, and Richard T. Koenig. 1999. Utah Water Quality.
Utah State University Extension. AG-425.3
extension.usu.edu/files/agpubs/ag425-3.pdf
- **Subsurface Drip Irrigation Systems (SDI) Water Quality Assessment Guidelines**
Rogers, Danny H., Freddie R. Lamm, and Mahbub Alam. 2003. Irrigation
Management Series. Kansas State University Agricultural Experiment Station and
Cooperative Extension Service.
www.oznet.ksu.edu/library/ageng2/mf2575.pdf
- **Irrigation Runoff Control Strategies**
Hansen, H., and W. Trimmer. 1997. A Pacific Northwest Extension Publication.
PNW 287, Oregon State University, Corvallis, OR.
eesc.orst.edu/AgComWebFile/EdMat/PNW287.pdf
- **How Excessive Water Use Affects Water Quality**
U.S. Environmental Protection Agency. 2003.
www.epa.gov/OW/you/chap2.html

Water Harvesting

- **Keyline Plan**
Yeomans, P.A. 1954. Waite and Bull, Sydney, Australia.
www.ibiblio.org/soilandhealth/01aglibrary/010125yeomans/010125toc.html
*A classic treatise on water harvesting including descriptions and illustrations of
landscape or watershed-based water harvesting systems.*
- **Rainwater Harvesting Systems for Montana**
Rupp, Gretchen. 1997. Montana State University. Bozeman, MT.
www.montana.edu/wwwpb/pubs/mt9707.html
*Rooftop rainwater harvesting methods with calculations for amounts of water that can be
harvested.*
- **The Web of Rain**
Srinivas, Hari. 2003.
www.gdrc.org/uem/water/rainwater/introduction.html
An introduction to rainwater harvesting.
- **Texas Guide to Rainwater Harvesting**
Todd, Wendy Price, and Gail Vittori. 1997. Second Edition. Texas Water
Development Board, in Cooperation with the Center for Maximum Potential

Building Systems. Austin, TX.

www.twdb.state.tx.us/publications/reports/RainHarv.pdf

Detailed description of methods for harvesting rainwater, calculating amounts that can be harvested based on location and rainfall and lists of companies selling rainwater collection equipment.

- **Sustainable Agriculture Extension Manual. Part 1**

Altieri, Miguel A. (ed.). International Institute of Rural Reconstruction

www.iirr.org/saem/part-1.htm

Methods developed for small holders in less developed countries. Some also applicable for small farms in the U.S.

Pasture Health and Drought Protection

ATTRA Publications

Healthy Pasture Management

ATTRA Publications

- *Pasture Soil Management*
Sustainable Pasture Management
Assessing the Pasture Soil Resource
Nutrient Cycling in Pastures
A Brief Overview of Nutrient Cycling in Pastures
Managed Grazing in Riparian Areas
Protecting Riparian Areas
- *Rotational Grazing*
Rotational Grazing
Matching Livestock and Forage Resources in Rotation Grazing
Paddock Design and Fencing-Water Systems in Rotational Grazing
Multispecies Grazing
Grazing Networks

Healthy Pasture Management

- **Ideas to Drought Proof your Grazing Land**
McCartney, Duane. 2003. Western Forage/Beef Group.
[www1.agric.gov.ab.ca/\\$department/newslett.nsf/all/wfbg2549?OpenDocument](http://www1.agric.gov.ab.ca/$department/newslett.nsf/all/wfbg2549?OpenDocument)
Use of sealed dugout holes for capturing snow melt water, residue management in pastures to conserve water, and avoiding early grazing to promote healthy root growth of forages.
- **Drought Facts, Drought, Drought Mitigation, and Drought Preparedness**
Ojos Negros Research Group. 021104. Ojos Negros Research Group. California.
threeissues.sdsu.edu/three_issues_droughtfacts04.html
Information on drought mitigation, including soil and water conservation and herd management during a drought.
- **Rangelands West**
<http://www.rangelandswest.org/>
- **Grazing Lands Conservation Initiative**
www.glci.org/
- **University of Minnesota Grazing Systems Planning Guide**
www.extension.umn.edu/distribution/livestocksystems/components/DI7606.pdf
- **University of Wisconsin**
<http://www.uwrf.edu/grazing/>
- **Missouri Forage Systems Research Center**
aes.missouri.edu/fsrc/research/index.stm
- **North Dakota Grassland Range reports**
www.ag.ndsu.nodak.edu/dickinso/grassland/rangrpt.htm

Pasture and Rangeland Management During Drought

Rangeland Management During Drought

Herd Nutrition and Productivity During Drought

Animal Health and Drought

Poisonous Plants

Rangeland Management During Drought

- **Animal Response to Drought. Drought Management on Range and Pastureland.**
Reece, Patrick E., Jack D. Alexander III, and James R. Johnson. 1991. A handbook for Nebraska and South Dakota. EC 91-123. Nebraska Cooperative Extension Service. Lincoln, NE.
wrac.sdstate.edu/pubs/range/ec91-123.pdf
Detailed discussion of forage response to drought, feed supplements, toxicity concerns, and management planning options.
- **Managing Small Acreage Pastures During and After Drought**
Warren, L.K., and P. Aravis. 2003. No. 6.112. Colorado State University Cooperative Extension. Fort Collins, CO.
www.ext.colostate.edu/pubs/natres/06112.html
Rotational grazing practices during droughts.
- **Drought and Its Relationship to Dynamics of Primary Productivity and Production of Grazing Animals**
Cook, C. Wayne. 2003. College of Natural Resources, Colorado State University.
www.cnr.colostate.edu/frws/research/cook/CookDrought/drought.htm
Discusses the need to build flexibility into operations in order to survive the effects of high variability in forage production from year to year due to drought and other historical factors.
- **Tips for Dealing with Drought on Range - Montana**
Lacey, John. n. d. CL1110. Ag Communications, University of Idaho. Moscow, ID.
drought.wsu.edu/1100/1110.PDF
- **Grazing Management During and After Extended Drought**
Mosley, Jeff. 2001. Montana State University Communication Services.
www.montana.edu/wwwpb/ag/grazmgmt.html
- **Beef and Cattle Drought Management and Water Use**
Montana State University. Animal and Range Sciences Extension Service.
animalrangeextension.montana.edu/Articles/Beef/Main-Drought.htm
Links to publications addressing grazing management, nutrition during drought, and water quality criteria for livestock.
- **Market Journal - Feed and Forage**
Agricultural Risk Management & Marketing Information from the University of Nebraska Cooperative Extension and the Institute of Agriculture & Natural Resources.
marketjournal.unl.edu/byTopic/Feed2.shtml
Audio and video presentations of discussions on beef management strategies, feeding alternatives, range management practices, culling, and drought pasture leases.
- **Dry Times: Managing Through a Drought**
Quivera Coalition. New Mexico.
www.quiviracoalition.org/documents/newsletter12.html

- Financial management in advance of and during a drought, also range management practices focusing on forage and ranges assessments and stocking rates.*
- **Planning for Beef Cattle Operations in the Face of Drought**
University of Nebraska. Lincoln, NE.
agecon.unl.edu/pub/cornhusker/7-24-02.pdf
Ration formulation, alternative feeds, financial assistance, and tax assessments for losses due to drought.
 - **Coping with Drought**
North Dakota State University.
www.ag.ndsu.nodak.edu/drought/drought.htm
Several short information sheets on crop and livestock management techniques during drought conditions. Includes information on alternative livestock feed options, planting when rains are delayed, grasshopper control, and forage poisoning concerns during dry conditions.
 - **Pasture Carrying Capacity in Times of Drought**
Barczewski, Rich, and Mark Wahlberg. 1994. AG-520-2. North Carolina Cooperative Extension Service. Raleigh, NC.
www.ces.ncsu.edu/disaster/drought/dro-26.html
Options for selling, contract grazing, or feedlot feeding cattle during drought.
 - **Herd Management during a Drought - South Carolina**
Hupp, H.P., and P.J. Rathwell. 1998. MMM 369. Clemson University Cooperative Extension Service.
cherokee.agecon.clemson.edu/mmm369.htm
Recommendations for reducing herd size, treating for parasites, and providing segregated feeding for different groups of animals during drought conditions.
 - **Drought, Water, Forages and Cattle**
Wroe, Bob. 2002. Alberta Agriculture Food and Rural Development.
www.agric.gov.ab.ca/agdisaster/0106j.html
Recommendations for rangeland and forage management during droughts. Also includes informative checksheets for ranchers to use management fields and herds during dry conditions.
 - **Drought Watch**
Agriculture and Agri-Food Canada
www.agr.gc.ca/pfra/drought/index_e.htm
Management practices for crops, livestock, pastures, and water during droughts; includes information on managing wells, increasing water inflow through snow trapping and zero tillage, and reducing evaporation through windbreaks and covers. Also includes recommendations for grain feeding to supplement grass during drought.
 - **Drought Strategies for the Livestock Producer**
New South Wales (Australia) Department of Primary Industries/ Agriculture.
minister.agric.nsw.gov.au/reader/907
Guidelines for managing livestock during droughts including financial decision making, strategic planning for culling, selling, or contract pasturing animals. Includes links to publications on animal health, water requirements, and livestock feeding during drought. Primarily for Australian ranchers but contains excellent information also applicable to U.S. farmers. Good documents on sheep management during drought.

Herd Nutrition and Productivity During Drought

- **Maintaining Herd Productivity During Drought**
Gimenez Jr., Diego M. n. d. Alabama Cooperative Extension System. Auburn University, AL.
www.aces.edu/drought/NewsRel/MntngHrdPrdctvty.htm
Management of environmental stress, health, and nutrition during drought
- **Planning for Beef Cattle Operations in the Face of Drought**
Clark, Richard T., and Don C. Adams. 2002. Cornhusker Economics. University of Nebraska. Lincoln, NE.
agecon.unl.edu/pub/cornhusker/7-24-02.pdf
Ration formulation, alternative feeds, financial assistance, and tax assessments for losses due to drought.
- **Calculate Forage during Droughts**
Noble Foundation. Ardmore, Oklahoma.
www.noble.org/ag/Pests/Drought/Forage_calculation.htm
Methods for calculating the amount of available forage considering rate of growth, height of pasture before and after grazing, and type of forage available. Also has links to discussions on how to cull cattle.
- **Alternative Feeds for Cattle during a Drought**
LeValley, R. Baird. 2003. No. 1.626. Colorado State University Cooperative Extension. Fort Collins, CO.
www.ext.colostate.edu/pubs/livestk/01626.html
Use of grain and hay supplements during times of drought, methods for protecting against nitrate and prussic acid poisoning.

Drought Planning and Management

- **Sustainable Management of Rangeland Resources**
University of Wyoming Cooperative Extension Service. Laramie, WY.
www.wyorange.net/
Includes publications on drought-related farm management practices, drought resistant forages, supplemental feeding, toxicity, culling, and financial aid programs.
- **Drought Strategies for Beef Producers:**
Part II: Supplementing Cattle on Drought-Affected Pastures and Ranges
Paterson, John, Rick Funston, Ron Carlstrom, and Greg Lardy. 2000. Montana State University Communications Service.
www.montana.edu/wwwpb/ag/drought1.html
Feed supplementation, water access, management strategies.
- **Limit Feeding Concentrate Diets to Cows**
Lalman, David. 1998. Oklahoma State University. Stillwater, OK.
www.okstate.edu/OSU_Ag/oces/timely/feeding.htm
A feeding method for times when hay and forage availability is low due to drought. Objective is to feed corn or other concentrate energy source in quantities just sufficient to meet animal's requirements for target level of maintenance.
- **Salvaging Drought-Stressed Crops**
North Dakota State University Extension Service. Fargo, ND.
www.ag.ndsu.nodak.edu/drought/salvage.htm

Stresses testing drought-stressed forages to determine nutritional value and for potential toxic properties.

- **Post Drought Management / Managing Post-Drought the E-Z Way**

Hughes, Harlan. 2003 Beef Magazine.

beef-mag.com/mag/beef_postdrought_management_part/

beef-mag.com/mag/beef_managing_postdrought_ezway/

Financial management decisions regarding rebuilding pasture resources and herd size following a drought.

Animal Health and Drought

- **BEHAVE : Behavioral Education for Human, Animal, Vegetation, and Ecosystem Management**

Utah State University, The University of Idaho, Montana State University, NWRC, The University of Arizona.

www.behave.net/

Excellent research and management information on factors affecting animal grazing practices. How to manage animals to decrease impacts of plant toxicity.

- **Animal Response to Drought**

University of Nebraska.

www.scottsbluff.unl.edu/animalresponsetodrought.htm

Feed supplementation and toxicity concerns.

- **Drought Related Toxicosis in Cattle**

Galey, Francis D. 1993. No. 92-08. University of California. Oakland, CA.

www.owue.water.ca.gov/docs/92-08.pdf

Nitrate poisoning, toxic plants, poor water quality.

- **Mycotoxins in Feed Grains and Ingredients.**

Herrman, Tim, and Dionisia Trigo-Stockli. 2002. MF-2061. Kansas State University Agricultural Experiment Station and Cooperative Extension Service. Manhattan, KS.

www.oznet.ksu.edu/drought/drought/MF2061.pdf

Aflatoxin poisoning. Description, causes, and prevention.

- **Understanding and Coping with Effects of Mycotoxins in Livestock Feed and Forage**

Jones, Frank T., Mary Beth Center, Winston M. Hagler, Jeff A. Hansen, Bob A.

Mowrey, Matt H. Poore, and Lon W. Whitlow. 1994. DRO-29. North Carolina State University Cooperative Extension Service. Raleigh, NC.

www.ces.ncsu.edu/disaster/drought/dro-29.html

- **Mycotoxins in Feeds**

Whitlow, L. W., and W. M. Hagler Jr. 2002. Feedstuffs Newspaper. July. p. 1-10.

www.oznet.ksu.edu/drought/drought/Mycotoxins%20in%20Feeds.pdf

Detailed information on aflatoxin and other mycotoxins.

- **Nitrate, Prussic Acid (HCN) and Grass Tetany Problems in Cattle Feeding**

Harris, Barney, and Jan K. Shearer. 1985. DS162.

University of Florida Cooperative Extension Service. Gainesville, FL.

edis.ifas.ufl.edu/BODY_DS162

- **Drought Conditions Conducive to Nitrate Accumulation**

Rankins, Dr. Darrell. n. d. University of Alabama Cooperative Extension System.

Auburn University, AL.

www.aces.edu/drought/NewsRel/nitrate.htm

- **Nitrate Toxicity of Montana Forages**
Cash, Dennis, Rick Funston, Marc King, and Dave Wichman. 2002. MT200205 AG. C-12. Montana State University Extension Service. Bozeman, MT.
www.montana.edu/wwwpb/pubs/mt200205.pdf
- **Prussic Acid Poisoning of Livestock. Causes and Prevention**
Vough, Lester R., and E. Kim Cassel. 2002. ExEx 4016. South Dakota State University Cooperative Extension Service. Brookings, SD.
agbiopubs.sdstate.edu/articles/ExEx4016.pdf

Poisonous Plants

- **Reducing Livestock Loss from Poisonous Plants through Grazing Management**
Taylor, C.A., Jr., and M.H. Ralphs. 1992. Journal of Range Management. Vol. 45. No. 1. p. 9-12.
jrm.library.arizona.edu/jrm_nav/V45N01
This volume contains several articles from a symposium on the ingestion of poisonous plants by livestock.
- **Reducing Livestock Losses from Poisonous Plants through Grazing Management.**
Poisonous Plants Information Database. Cornell University.
www.ansci.cornell.edu/plants/
- **Poisonous Plants and other Plant Toxins**
University of Maryland Small Ruminant Page.
www.sheepandgoat.com/poison.html
- **Does Drought Contribute to Livestock Losses from Poisonous Plants?**
Frost, Rachel. n. d. University of Idaho. Moscow, ID.
www.cnr.uidaho.edu/range556/App1_BEHAVE/projects/drought.html
- **Poisoning of Livestock by Plants**
Robinson, S. E. 2002. 87-016. Ministry of Agriculture and Food. Ontario, Canada.
www.gov.on.ca/OMAFRA/english/livestock/dairy/facts/87-016.htm

Water Management, Heat Stress, and Drought

Livestock Water Needs

Heat Stress

Livestock Water Needs

- **Livestock Water Needs**

Clemson University

virtual.clemson.edu/groups/extension/drought/waterman.htm/livewat.htm

Table of water needs at 70 and 90 degrees Fahrenheit for various types of livestock.

- **Shallow Buried Pipelines for Summer Pasture Livestock Watering**

Woelcke, Reynold. 2003. Agriculture and Agri-Food Canada.

www.agr.gc.ca/pfra/water/pipespsh_e.htm

Costs, equipment requirements, and protection against frost.

Heat Stress

- **Heat Stress in Cattle**

National heat stress Web page.

www.liru.asft.ttu.edu/Collab/Heat_stress/heatstress.html

Keeping animals cool during drought, including effects of feeding regimes on body temperature and heat stress.

- **Protecting Livestock from Heat Stress**

Hupp, H. D., and P. J. Rathwell. 1998. MMM 371. Clemson University Extension Service. Clemson, SC.

cherokee.agecon.clemson.edu/mmm371.htm

- **Heat Stress and Beef Production**

Clemson University Cooperative Extension Service. Clemson, SC.

virtual.clemson.edu/groups/psapublishing/disaster/drought/Drout2.htm

Includes heat stress index and steps to take to protect animals at under increasing heat stress.

- **Feedlot Heat Stress Checklist**

Griffin, Dee. n. d. University of Nebraska. Lincoln, NE.

gpvec.unl.edu/HeatDrought/flheatsr.pdf

Conditions for heat stress and steps for developing a heat stress management plan.

- **Heat, Drought, and Early Weaning Links**

University of Nebraska. Lincoln, NE.

gpvec.unl.edu/HeatDrought/HeatDroughtInformation.htm

Drought Programs by State

Arizona
California
Colorado
Connecticut
Florida
Georgia
Idaho
Indiana
Kansas
Kentucky
Maine
Maryland
Massachusetts
Minnesota
Missouri
Montana
Nebraska
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Pennsylvania
South Carolina
South Dakota
Texas
Utah
Virginia
Wyoming
Washington

Arizona

- **Water and Drought**
Arizona Rangelands. University of Arizona, Tucson, AZ.
alic.arid.arizona.edu/range_west/html/az/template4.asp?level1=science&level2=ecology&level3=water
- **Managing Arid and Semi-Arid Watersheds**
Rocky Mountain Research Station. University of Arizona/US Forest Service.
Tucson, AZ.
ag.arizona.edu/OALS/watershed/

California

- **California Department of Water Resources-Drought Information**
www.dpla2.water.ca.gov/dplapubs.cfm?nav=6,650,704
- **Drought Facts, Drought, Drought Mitigation, and Drought Preparedness**
threeissues.sdsu.edu/three_issues_droughtfacts01.html
Information on drought mitigation has general applicability. Addresses soil and water conservation and herd management during a drought.
- **Catalogue of Irrigation Publications**
University of California. Agriculture and Natural Resources. Davis, CA.
anrcatalog.ucdavis.edu/merchant.ihtml?id=157&step=2

Colorado

- **Drought Resource Center**
Colorado State University. Fort Collins, CO.
drought.colostate.edu/
- **Catalogue of Irrigation Publications**
Colorado State University. Fort Collins, CO.
www.ext.colostate.edu/pubs/crops/pubcrop.html#irr
- **Colorado Water Resources Research Institute (CWRRI)**
Colorado State University. Fort Collins, CO.
cwrri.colostate.edu/
- **Colorado Climate Center – Drought Resources**
ccc.atmos.colostate.edu/drought.php
- **Colorado Office of Emergency Management - Drought Monitoring**
www.dola.state.co.us/oem/PublicInformation/Drought/drought.htm

Connecticut

- **State of Connecticut Drought Response**
www.drought.state.ct.us/

Florida

- **Florida Emergency Management - Drought Watch**
www.dca.state.fl.us/bpr/EMTOOLS/florida_drought_center.htm
USGS/Water Resources of Florida – Florida Water Watch
fl.water.usgs.gov/Water_data/FLdrought.html

Georgia

- **Drought in Georgia: Water use restrictions and climatological information**
interests.caes.uga.edu/drought/

Idaho

- **Catalogue of Irrigation Publications**
Idaho State University College of Agriculture and Life Sciences. Moscow, ID.
info.ag.uidaho.edu:591/catalog/FMPro?-db=catalog1_&-lay=generic&-format=list.html&Category1=Irrigation&-sortfield=Title&-max=25&-find
- **Idaho Department of Water Resources**
www.idwr.state.id.us/

Indiana

- **Agronomic Drought Stress Information**
Purdue University. Lafayette, IN.
www.agry.purdue.edu/ext/drought/index.html

Kansas

- **Drought Resources**
Kansas State University. Manhattan, KS.
www.oznet.ksu.edu/drought/
- **Kansas Water Office: Governor's Drought Response Team and Drought Report**
www.kwo.org/
- **Low Water-Use Plants for Kansas Landscapes**
Kansas State University. Manhattan, KS.
www.oznet.ksu.edu/library/hort2/mf2067.pdf
- **Irrigation at K-State Research and Extension**
Kansas State University. Manhattan, KS.
www.oznet.ksu.edu/irrigate/

Kentucky

- **Kentucky and National Drought Information** www.wagwx.ca.uky.edu/drought.html
Kentucky Water Management Planning.
water.nr.state.ky.us/wsp/WSP10.htm

Maine

- **State of Maine Drought Task Force**
www.state.me.us/mema/drought/

Maryland

- **University of Maryland - Drought Resources**
University of Maryland. College Park, MD.
www.agnr.umd.edu/HotTopics/Drought/

Massachusetts

- **Massachusetts and Rhode Island Drought Information / USGS**
ma.water.usgs.gov/drought/drought_index.htm

Minnesota

- **University of Minnesota- Drought Information Resources**
University of Minnesota. St. Paul, MN.
climate.umn.edu/doc/drought_2000.htm

Missouri

- **Water Resources Program - Missouri Department of Natural Resources**
www.dnr.state.mo.us/geology/droughtupdate.htm

Montana

- **Montana Natural Resource Information System**
Water Supply and Drought Monitoring
nris.state.mt.us/wis/supply1.html
- **Montana State University- 2002 Drought Links**
Montana State University. Bozeman, MT.
extn.msu.montana.edu/About_Us/agriculture/Drought/drought.html
- **Montana Drought Monitoring**
nris.state.mt.us/Drought/

Nebraska

- **Drought Central, Nebraska's Drought Management Web site**
Nebraska and federal government drought programs.
www.droughtcentral.org/
- **Nebraska's Climate Assessment Response Committee (CARC)**
Drought Mitigation and Response Plan
carc.nrc.state.ne.us/carcunl/docs/planning.html
- **Water Management for Irrigation in Nebraska**
Nebraska Cooperative Extension Service. University of Nebraska. Lincoln, NE.
www.ianr.unl.edu/pubs/irrigation/nf140.htm
- **Drought Information and Resources for Nebraskans**
University of Nebraska. Lincoln, NE.
ianrhome.unl.edu/drought/
- **Irrigation Operations and Management**
Catalogue of publications and fact sheets. University of Nebraska. Institute of Agriculture and Natural Resources. Lincoln, NE.
ianrpubs.unl.edu/irrigation/

New Hampshire

- **New Hampshire Department of Environmental Services**
Drought Management Plan
www.des.state.nh.us/dam/drought_mgmnt.htm

New Jersey

- **New Jersey Drought Information**
www.njdrought.org/

New Mexico

- **New Mexico Drought Planning Team**
weather.nmsu.edu/drought/

New York

- **New York State Department of Environmental Conservation - Drought Watch**
www.dec.state.ny.us/website/dow/droughtfacts.html

North Carolina

- **North Carolina Drought Monitoring Council**
www.ncwater.org/Water_Supply_Planning/Drought_Monitoring_Council/

- **North Carolina Drought Watch - USGS**
nc.water.usgs.gov/drought/
- **North Carolina State University Drought Information Leaflets**
www.ces.ncsu.edu/disaster/drought/
- **Catalogue of Irrigation and Water Management Publications**
North Carolina State University. Department of Biological and Agricultural Engineering. Raleigh, NC.
www.bae.ncsu.edu/programs/extension/evans/

North Dakota

- **North Dakota State University - Coping with Drought**
North Dakota State University. Fargo, ND.
www.ag.ndsu.nodak.edu/drought/drought.htm
- **Catalogue of Irrigation Publications**
North Dakota State University Cooperative Extension. Fargo, ND.
www.ext.nodak.edu/extpubs/irrigate.htm

Ohio

- **Ohio State University Extension - Crop, Forage, and Livestock Information**
Ohio State University. Columbus, OH.
corn.osu.edu/drought02/

Oklahoma

- **Oklahoma Water Resources Board-Drought and Water Resources Monitoring**
www.owrb.state.ok.us/supply/drought/drought_index.php

Pennsylvania

- **Penn State Drought Resources**
Pennsylvania State University. College Park, PA.
www.cas.psu.edu/docs/coext/disaster/drought1.html
- **Pennsylvania Dept. of Environmental Protection**
Drought Information
www.dep.state.pa.us/dep/subject/hotopics/drought/

South Carolina

- **South Carolina Drought Information Center**
www.dnr.state.sc.us/climate/sco/drought.html
- **Coping with Drought Information Page -**
Agricultural Resources Clemson University. Clemson, SC.
virtual.clemson.edu/groups/extension/drought/index.htm

South Dakota

- **South Dakota Drought Information**
www.state.sd.us/doa/drought.htm
- **South Dakota State University Drought Information**
South Dakota State University. Brookings, SD.
sdces.sdstate.edu/drought/livestock.html

Texas

- **Texas Water Info-Drought Resources**
www.texaswaterinfo.net/Monitoring/Meteorological/Drought/index.htm
- **Texas Drought Resource Information Packet: Environmental, social, and economic costs of droughts, processes used to declare an emergency.**
www.agr.state.tx.us/producer%5Finfo/hay%5Fgrazing/drought.pdf
- **Texas Natural Resources Conservation Commission - Drought Information**
www.tnrcc.state.tx.us/permitting/waterperm/drought.html
- **Texas A&M Drought Information Page**
Texas A&M University. College Station, TX.
agnews.tamu.edu/drought/
- **Texas Water Development Board - Drought**
www.twdb.state.tx.us/DATA/DROUGHT/drought_toc.htm

Utah

- **Drought Resources and Information**
Utah State University. Logan, UT.
extension.usu.edu/publica/engrpubs.htm

Virginia

- **Virginia Department of Environmental Quality-Drought Monitor**
www.deq.state.va.us/info/drought.html

Wyoming

- **Drought Planning and Management**
Sustainable Management of Rangeland Resources. University of Wyoming
Cooperative Extension Service. Laramie, WY.
www.wyorange.net/

Washington

- **Catalogue of Extension Publications**
Washington State University. Pullman, WA.
www.drought.wsu.edu/pubs.html