	-	

Distr. GENERAL

E/ESCWA/SDPD/2005/9 24 October 2005 ARABIC

ORIGINAL: ENGLISH

E/ESCWA/SDPD/2005/9
ISSN 1817-6801
ISBN 92-1-628048-4
05-0540

·

Sales No. A.05.II.L.17

. (

_

5 .

.2000 ³ 981 1960 () ³ 3 300

.

.

2001 1995 :

1999/1998 70 1999 .

. 88 1999 .

1999

2001 1999 :

. 1991/1990 :

. 77 58

2001 1999

()

(•)

- -

1			
		_	
4			-
4		-	
5		-	
7		-	
9		-	-
9		_	
11		-	
13		_	
15		-	-
15		-	
17	-	_	
22		_	
22		-	
24		_	
26		_	
28		_	
29		_	
35		_	
39		_	
39		_	

- -

()	-	
()	_	
	_	
	_	
	-	
	-	
	-	
	-	-
	_	
	-	
	-	
	-	
	-	
	-	
		-
	_	
	-	
	-	
	-	
	-	
	-	
: -		_
	_	
	-	
	-	
	-	
	-	

- -

	:	(Wilhite)	-2
82			
83	: -		-3
15			-1
25			-2
26			-3
30			-4
30			-5
32			-6
33			-7
23 23 24 40 52 61	1985-1951	- -	-1 -2 -3 -4 -5
44	99/1998		-1
	99/1998 -		-2
52	1998-1989		
85		• • • • • • • • • • • • • • • • • • • •	

(UN Water) (1)

(70 (): 43 4) () 11) 6) : 12) 20 (6) (9) 32) () 57) : 20 ((47) (21) 74) (21) 21) .(.() () (

-4-

-

. (2)

.21

.

. (3)

International Strategy for Disaster Reduction and World Meteorological Organization, *Water and Disasters: Be* (2) *Informed and Be Prepared* (Geneva, 2004), p. 27.

[.]American Meteorological Society, "AMS policy statement on meteorological drought", 1996 (3)

[.]National Drought Mitigation Center, "Spotting drought before it's too late", University of Nebraska-Lincoln, 2005 (4)

⁽⁵⁾2002/2001 (6) 0.62 4.5 $(^3)$ 1960 3 300 (8)2000 981 1 250 1996 .(10) 1 000 .(11) 55.6 50.9 (12) 61.4 (5) International Strategy for Disaster Reduction, Drought: Living with Risk: An Integrated Approach to Reducing Societal Vulnerability to Drought; ISDR Ad Hoc Discussion Group on Drought (Geneva, 2004). .ISDR and WMO, Water and Disasters, p. 21 (6) ESCWA, Federal Institute for Geosciences and Natural Resources, Germany (BGR) and Deutsche Gesellschaft für (7) Technische Zusammenarbeit (GTZ), Enhancing Negotiation Skills on International Water Issues in the ESCWA Region (Beirut, 2004), p. 1. (8) World Bank, "Water Scarcity in the Middle East and North Africa", (Washington, DC, 2005) in Enhancing (9) Negotiation Skills on International Water Issues of the ESCWA Region, p. 1.) . 3 1 000 :1992 (10).(1992 10517 " (11)E. DePauw, "Drought early warning systems in West Asia and North Africa" (ICARDA, Syrian Arab Republic, 2004), p. 68. (12)

(13)

(-)

IUCN Centre for Mediterranean Cooperation and Global Water Partnership - Mediterranean, "Drought Preparedness (13) and Risk Management in the Mediterranean Region", paper by T.A. El Hassani presented at Water, Wetlands and Climate Change: Building Linkages for their Integrated Management, Mediterranean Regional Roundtable, held at Athens in 2002 (Gland, Switzerland, International Union for the Conservation of Nature and Natural Resources, 2002).

.ESCWA, BGR and GTZ, Enhancing Negotiation Skills on International Water Issues in the ESCWA Region (14)

.2 (15)

(16)

()

2001

.(17)

.(18)

(19)

.E. DePauw, "Drought early warning systems in West Asia and North Africa" (17)

(18)

IUCN, "Drought Preparedness and Risk Management in the Mediterranean Region", paper presented by T.A. El (19) Hassani at the Mediterranean Regional Roundtable, p. 7.

-8-

(20)

(21)

.14 (20) (21) .9

. -

-1

(22)

(23)

_____-2

(24) . .

.National Drought Mitigation Center, "What is drought?" University of Nebraska-Lincoln, 2005 (22)

. American Meteorological Society, "AMS policy statement on meteorological drought" (23)

(24)

Earth Observatory, *Drought: The Creeping Disaster* (Florida, National Aeronautics and Space Administration [NASA], 2005).

-3

(26)

(27)

- -4

(28)

. (29)

. American Meteorological Society, "AMS policy statement on meteorological drought" (26)

.National Drought Mitigation Center, "Spotting drought before it's too late" (27)

UNDP-DDC/BCPR and UN-ISDR, *Drought Risk and Development* Policy, Discussion paper for the UNDP- (28) DDC/BCPR and UN-ISDR Expert Workshop, 31 January - 2 February 2005, Nairobi.

.(30) -1 (1): () (2) (3) (1): () (2) (5) (4) (3) (7) (6) (32) (8)**(1)**: () (2) (3) (5) (4) () (1): (2) (3) (4) (5)

CLIMAS, "Drought planning and mitigation: social vulnerability", Climate Assessment for the Southwest, The (30) Institute for the Study of Planet Earth, University of Arizona, 2004.

UNEP, *Environmental Emergencies News*, issue 2 (Nairobi, United Nations Environmental Programme, February 2004).

(32)

(1):			(●)
	(3)		(2)
		-2	

. (33)

.

(34)

Examples include the Provincial Emergency Program of British Columbia, the Canada Hazard Risk and (33) Vulnerability Analysis Tool Kit, and the United States National Oceanic and Atmospheric Administration community vulnerability assessment step-by-step guide.

ISDR. *Living with Risk: A Global Review of Disaster Reduction Initiatives* (Geneva, Inter-Agency Secretariat of the United Nations International Strategy for Disaster Reduction, 2004).

1991

.(35)(

. (36)

(38)

D.A. Wilhite and M.D. Svoboda, "Drought early warning systems in the context of drought preparedness and mitigation" (Lincoln, Nebraska, National Drought Mitigation Center, 2000).

.E. DePauw, "Drought early warning systems in West Asia and North Africa" (36)

(37)

(38)

(39)

. (40) . (41)

-. (42)

. (43)

. (39)

(40)

United Nations International Strategy for Disaster Reduction, Living with Risk: A Global Review of Disaster (41) Reduction Initiatives.

United Nations Convention to Combat Desertification and Drought, "Early Warning Systems: report of the ad hoc Panel" (ICCD/COP (4)/CST/4), Conference of the Parties, Committee on Science and Technology, fourth session, Bonn, December 2000.

(43)

-1 Platform for the Promotion of Early Warning, "Basics of early warning" (United Nations/International Strategy for Disaster Reduction, 2005).) " .(1 .(44) () (): .(45)

Platform for the Promotion of Early Warning, "Basics of early warning" (United Nations/International Strategy for (44) Disaster Reduction, 2005).

United Nations Convention to Combat Desertification and Drought, "Existing experience of early warning systems (45) and specialized institutions in this field" (ICCD/COP(3)/CST/6), Conference of the Parties, Committee on Science and Technology, third session, Recife, October 1999, p. 31.

(46)

.

______ -3

R. Huss-Ashmore, "Local-level data for use as early warning indicators" (Philadelphia, University of Pennsylvania), (46)

.7 " (47)

United Nations International Disaster Reduction Strategy, *Living with Risk: A Global Review of Disaster Reduction* (48) *Initiatives.*

Internet Journal of African Studies, vol. 2, March 1997.

.(49) (Palmer Drought Severity Index) (Surface Water Supply Index) . (50)(Deciles) (Crop Moisture Index) (Reclamation Drought Index)

.Platform for the Promotion of Early Warning, "Basics of early warning" (49)

M. Hayes, "What is drought? Drought indices", National Drought Mitigation Center, University of Nebraska-Lincoln, 2005. (50)

(Gini index) .(51) . .(52)

.R. Huss-Ashmore, "Local-level data for use as early warning indicators" (51)

(52)

______ -3

(quintiles)
. -

--

³ 180

.

·

.

.

.

-. - :

.

· - -:

1999

12 1999 50 .⁽⁵³⁾ 13

63 37

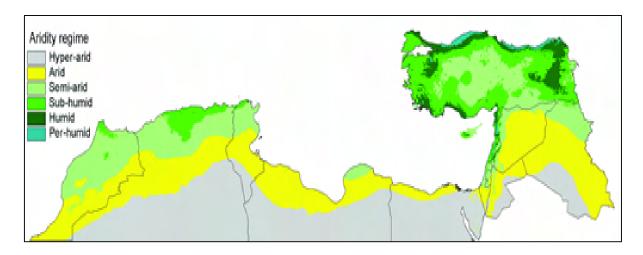
. (1)

FAO, "Drought in the Near East: cereal and livestock production down sharply", Global Watch, Rome, July 29, (53) 1999.

. (54)

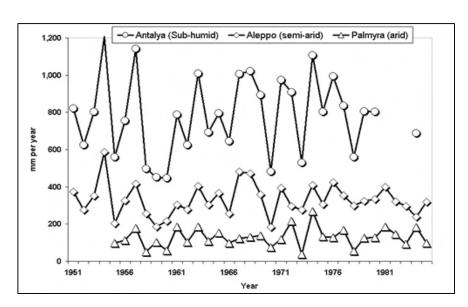
FAO, "Adverse effects of the drought on domestic food production during 1998/1999 in Iraq", Food and (55) Agriculture Organization of the United Nations in Iraq, Baghdad, May 1999, p. 16.

-1



.E. DePauw, "Drought in WANA: six frequently asked questions", ICARDA Caravan 17, December 2002 :

1985-1951 -2



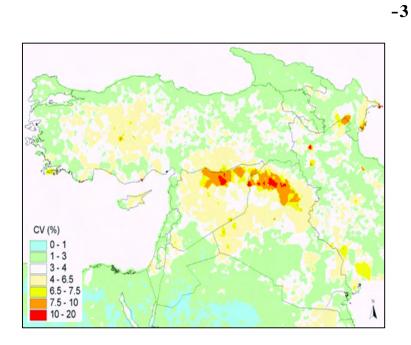
.E. DePauw, "Drought in WANA: six frequently asked questions", ICARDA Caravan 17, December 2002 :

(El Nino Southern Oscillation ENSO - cycle)

. (56) .

3 .

(57)



.E. DePauw, "Drought in WANA: six frequently asked questions", ICARDA Caravan 17, December 2002 :

: 3 500 :(58)

.(2)

.E. DePauw, "Drought early warning systems in West Asia and North Africa" (56)

."Drought in WANA: six frequently asked questions", ICARDA *Caravan* 17, December 2002 (57)

.1 (58)

-2

	1		1	T
(*)	2000	(³) 1997	(3)	
309	28333.3	173	100,2	
106	16363.6	925	59600	
78	7108.3	2963	62850	
118	1895.9	168	750	
439	23333.3	89	160.1	
40	2756.6	995	3100	
84	15339.7	613	1468	
564	10047.6	98	51.4	
268	4075.1	311	6080	
46	3536.5	1438	21475	
388	6371.0	137	315	
205	-	-	215	
55	3786.3	303	4900	

ESCWA, Application of Sustainable Development Indicators in the ESCWA Member Countries: Analysis of Results (2000), p. 22; and World Resources Institute, "EarthTrends Online Database", Washington, D.C., 2004.

(*)

80

46 40 68 .(62)1997 40

61 16

.ESCWA, Updating the Assessment of Water Resources in the ESCWA Member Countries (1999), p. 60 (59)

(60)

.ESCWA, Enhancing Negotiation Skills on International Water Issues in the ESCWA Region, p. 2 (61)

.ESCWA, Updating the Assessment of Water Resources in ESCWA Member Countries, p. 5 (62)

. (63)	93		70
		2000-199	99
-	89	51	
		1999	. (64)

86 .⁽⁶⁵⁾(3) 1997 95 52 2000

-3

/				
(2002)	(2002)	(2000)	(2002)	
0.01	66.6	57	-	
0.05	100.0	78	16.8	
0.25	57.8	92	-	
0.08	18.8	75	2,2	
0.01	86.6	52	-	
0.09	33.2	67	11.7	
0.03	76.5	91	-	
0.04	61.9	72	-	
0.17	42.7	89	5.1	
0.32	24.6	95	23.5	
0.10	28.6	68	-	
0.07	8.7	-	6.3	
0.08	30.0	95	15.2	

[.] World Resources Institute, "EarthTrends Online Database", Washington, D.C., 2004 (63)

[.]ESCWA, Enhancing Negotiation Skills on International Water Issues in the ESCWA Region, p. 9 (64)

[.] Ibid., Updating the Assessment of Water Resources in the ESCWA Member Countries, p. 47 (65)

2004 (FAOSTAT) :____

2004 (AQUASTAT) .2004 . .

0.17 1990 0.33

.(66)1996

76 (67) /

•

ICARDA, "Drought preparedness and mitigation of the effects of drought", paper presented at the Expert Group (66) Meeting for the Preparation of the Sub-Regional Action Program on Combating Desertification and Drought in Western Asia, Muscat, Oman, September 1998, p. 1.

.FAOSTAT Online Database (Rome, 2004) (68)

(69)

FAO and the World Bank, Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World, (67) table 3.1, "Major farming systems of the Middle East and North Africa" (2001).

E. DePauw, An Agro-ecological Exploration of the Arabian Peninsula (Aleppo [Syrian Arab Republic], ICARDA, (69) 2002).

(70)

30

. (72)

.⁽⁷³⁾

-

.(74)

2000-1990

M. Malakouti, "The role of zinc on the yield and grain fortification of wheat in the calcareous soils of dry lands", (70) paper presented at the Seventh International Conference on Development of Drylands, held at Tehran, September 2003.

P. Hazell and others, "Managing droughts in the low-rainfall areas of the Middle East and North Africa", (71) International Food Policy Research Institute, Washington, D.C., September 2001, p. 4.

FAO and the World Bank, Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World, (72) table 3.1.

[.]P. Hazell and others, "Managing droughts in the low-rainfall areas of the Middle East and North Africa", p. 7 (73)

ESCWA, Regional Report: Implementation of Agenda 21: Review of Progress Made since the United Nations (74) Conference on Environment and Development, 1992 (Beirut, April 1997), p. 13.

50 (75)

.

. . (76)

(): ()

63.8

2000

.15 (75)

.UNEP, "Global Environment Outlook –1", Global State of the Environment Report 1997 (Nairobi, 1997) (76)

. 70

.

.

2003-1998 3.4 2003-1998 3.5 .⁽⁷⁷⁾(4) 2003 13.3 -4

2000-1998	2003	2002	
3.4	4.7	3,3	
3.5	-	-	
-	13.3	12.9	
-	27.0	-	

.18 (2004) :_____

.(5)

-5

15	()		
(2002)	(2005-2000)	(2015-2002)	
%29.2	2.7	%1.8	
%35.2	3,3	%1.9	
%41.4	4.8	%2.6	
%38.0	3.6	%2.1	
%26.1	2.7	%2.4	
%29.6	2,2	%1.2	
%37.2	5.0	%2.7	

[.] International Labour Organization, Global Employment Trends (Geneva, 2004), p. 18 (77)

%26.6	3.2	%1.3	
%39.1	4.5	%2.5	
%38.3	3,3	%2,2	
%25.8	2.8	%1.5	
%46.1	5.6	%3,3	
%48.7	7.0	%3.6	

.UNDP Human Development Report Online Database, 2004:

3.5 2.5 .⁽⁷⁸⁾ 8 4

3.81 .⁽⁷⁹⁾ 2.9

42 31 2001

.ESCWA, Updating the Assessment of Water Resources in the ESCWA Member Countries, p. 2 (78)

ESCWA, Where Do Arab Women Stand in the Development Process? A Gender-Based Statistical Analysis (2004), (79) p. 3.

-32-

.(6)

43

.

•

-6

		T	
(**)(^(*) (2000-1990)	^(*) (2005)	
⁽⁾ 6.7	-	-	
⁽⁾ 11.1	%43.9	%30.9	
-	-	-	
()18.8	%7,4	%8.1	
-	-	-	
-	-	%9.6	
()3.1	-	%21.1	
-	-	%6.5	
-	-	%7.8	
-	-	%14.9	
()18.1	-	%13.8	
()2.6	-	-	
()13.5	%45.2	%40.3	

; http://hdr.undp.org/statistics/data/(*) UNDP Human Development Report Online Database, 2005, available at: http://en.undp.org/statistics/data/(*) UNDP Human Development Report Online Database, 2005, available at: http://en.undp.org/statistics/data/(*) UNDP Human Development Report Online Database, 2005, available at: http://en.undp.org/statistics/data/(*) UNDP Human Development Report Online Database, 2005, available at: http://en.undp.org/statistics/data/(*) UNDP Human Development Indicators in the ESCWA Member Countries: Analysis of Results (E/ESCWA/ED/2000/4), p. 16.

.1995 () 1993 () 1991 ()

.

10.1 (

16.8

15.2 23.5

:

46 32 11 33

.

.

1999 . 20 88 1998 1999

.(81) 10 40

-7

·

.

: -

•

			•
) ((
	17	2	
	30	7	
	18	2	
)	14	4	
) (9	23	
) (5	62	
	1	1	
	6	1	

FAO, Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World, table 3.1, "Major farming systems of Middle East and North Africa" (Rome).

FAO, "Special Report: Drought Causes Extensive Crop Damage in the Near East, Raising Concerns for Food (81) Supply Difficulty in Some Parts" (Rome, 16 July 1999), p. 3.

(82) 7

.

1999

. (83) - .

()

25) (84) (

(12.5) - .⁽⁸⁵⁾(1)

(82)

FAO, "Drought conditions threaten food security of Syria's nomadic livestock producers" (Rome, Global Watch, Food and Agriculture Organization of the United Nations, 8 September 1999).

ICARDA, "Poverty, Food Systems and Nutritional Well-Being of Children in Northwest Syria", ICARDA (84) Development Seminar Series, Aleppo, 2005.

(85)

,

1996 55.4 51 31 . 10 95 86 70

•

() 440 495 219 140 345 206 275 (87) 50 118 50 (88)

.

•

(90)

.ESCWA, Updating the Assessment of Water Resources in the ESCWA Member Countries, p. 49 (86)

. (87)

.ESCWA, Enhancing Negotiation Skills on International Water Issues in the ESCWA Region, p. 5 (88)

.UNDP Human Development Report Online Database, 2004 (89)

(90)

-37-(NEMEDCA) 2001 (NARS) .(91)

ICARDA, "The West Asian Joint Program for Drought Preparedness and Mitigation of the Effects of Drought, Sub-Regional Program on Combating Desertification and Drought in Western Asia" (Aleppo, November 1998), p. 6.

(92)

.

(93)

_____-2

· (96)

.E. DePauw, "Drought Early Warning Systems in West Asia and North Africa" (92)

(93)

(94)

.E. DePauw, An Agro-ecological Exploration of the Arabian Peninsula, p. 65 (95)

."Drought Early Warning Systems in West Asia and North Africa" . (96)

-39-

.

______ -3

. (97) .

. (97)

.

2000 1995 1999/1998 70 1999 . (98) 1999 (²) 89 200 .(99) 5 :(100)(4) () 90 :(200 20 000) 250-200 60 000 700-300

FAO, "Worst drought in decades decimates cereal crops in Jordan" (Rome, Global Watch, Food and Agriculture (98) Organization of the United Nations, 3 June 1999).

"Country Pasture/Forage Resource Profiles: Jordan" (Rome, Food and Agriculture Organization of the United Nations, 2001), p. 1.

(100)

40 000

10 000 80 000

:_____()

13 500

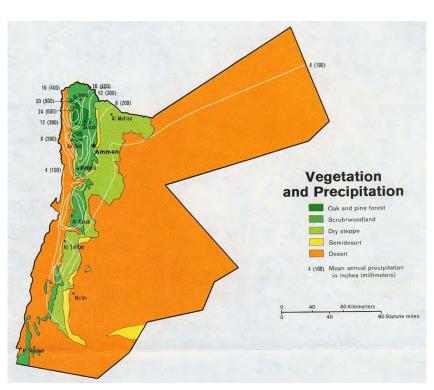
:_____ () . 500

. 25

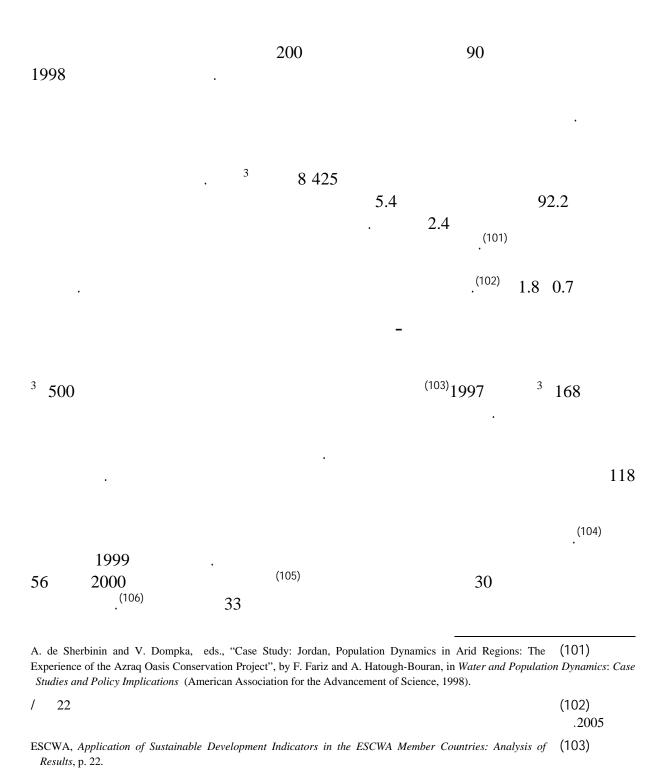
12 000

:()_____(•)

-4



"Jordan – Vegetation and Precipitation", Perry-Castañeda Library Map Collection, University of Texas at Austin, 1978. : _____ Available at: http://www.lib.utexas.edu/maps/jordan.html.



.2005

21

."Jordan announces summer water rationing plan for parched kingdom", Associated Press, 26 April 2000 (106)

.FAO, "Worst drought in decades decimates cereal crops in Jordan" (105)

(104)

						. (107)	3	275
								(108)
43								(109) ·
	(110)	:						
				16				
2000							2001	-1999
2000	(111)	•						2
	(111) ·							³ 60 000
					-			
		.2005	/	21				(107)
	Hatough-Bouran, Ca		ın, Pop	ulation Dyna	mics in Arid R	egions: The Exp	erience of	(108)
		.2005	/	21				(109)
	.ESCWA, Enh	ancing Negotia	tion Ski	ills on Intern	ational Water I	ssues in the ESC	WA Region	(110)
	."Syria p	oumps water to J	ordan	to alleviate d	rought", Associ	iated Press, 13 A	ugust 2000	(111)

75 99/1998 98/1997 30 34 73 33 .(112) .(113) 88 1999 (114)1999 10 (115) 0.6 5 40 000 18.8 .() (116) 60 .(117) 80 22 000 1986 .(118) 1987 130 000 1985 63 000 1999 1 99/1998 1999 0.50 400-200

FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Kingdom of Jordan" (Rome, Food and Agriculture Organization of the United Nations, 26 May 1999), p. 12.

[.]UNEP, "Disasters: West Asia: Drought", Global Environment Outlook 3 (Nairobi, 2002) (113)

[.]FAO, "Worst drought in decades decimates cereal crops in Jordan" (114)

[.]FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Kingdom of Jordan", p. 2 (115)

^{.4 (116)}

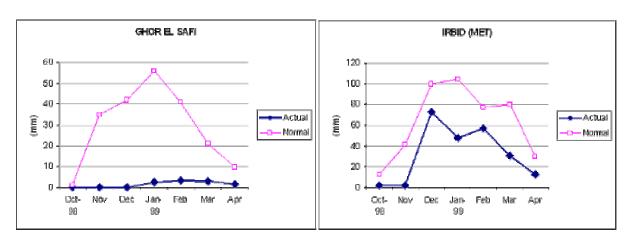
[.]FAO, "Country Pasture/Forage Resource Profiles: Jordan", p. 3 (117)

R. Rinehart and others, "Agriculture", in Jordan: A Country Study, Country Studies Series, U.S. Government (118) Printing Office, 1980.

57-45

.(120) 45-15

99/1998 -1



24 20 .

15-5

.(123)

1999

(119)

.2005 /

.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Kingdom of Jordan", p. 8 (120)

.4 (121)

.5 (122)

.13 (123)

. (124) 80

- .

(125) ·

20 (126)

133 209

(130)

22 (124) .2005 /

(125)

Intergovernmental Panel on Climate Change, *IPCC Special Report on The Regional Impacts of Climate Change:* (126) *An Assessment of Vulnerability*, chap. 7, "Middle East and Arid Asia" (Geneva, 2000).

F. Fariz and A. Hatough-Bouran, Case Study: Jordan, Population Dynamics in Arid Regions: The Experience of (127) the Azraq Oasis Conservation Project, p. 12.

.<u>http://www.ramsar.org</u>: (128)

.2005 / 21 (129)

F. Fariz and A. Hatough-Bouran, Case Study: Jordan, Population Dynamics in Arid Region: The Experience of the (130) Azraq Oasis Conservation Project, p. 14.

-

1991

. 1999

25)

850 (1999 . (131)

. 3.6

2015 2002 1.2

. / 0.08

40 2 (132)

6 20 15

.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Kingdom of Jordan", p. 2 (131)

.R. Rinehart and others, "Agriculture", in Jordan: A Country Study (132) .FAO, "Country Pasture/Forage Resource Profiles: Jordan", p. 3 (133)

" "

65 75

(136)

. (137)

-

3 2000 1999

.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Kingdom of Jordan", p. 8 (134)

. (135)

.6 (136)

(137)

. "Water shortages plague Jordan", US Water News Online, September 2002 (138)

			. (139)				156
. (140)	80 36		95		(24-12)	
						·(141)	
1999							
•	1	999			·	180 000	
.(143)		(142)		1999	- /		
·	65		85		75	()) 95
						())
						())
						(144)) -
World Health Organization, <i>Cou</i> Regional Office for the Eastern N			for WHO and J	- Iordan, 2003-2	2007 (Cairo,	wно (139))
."Jordan facing water shortage", US Water News Online, July 1998 (140))	
."Water shortages plague Jordan", p. 6					an", p. 6 (141))	
.FAO, "F	AO/WFP Cr	op and Food Sup	ply Assessment	Mission to the	Kingdom of	Jordan" (142))
						(143))

.2005 / 21

(144)

-49-

(146) 50 (145) 30 (•)

2000-1999

.(147)

_____ -1

.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Kingdom of Jordan" (145)

.2005 / 21 (146)

,

(147)

.2005 / 22

-50-

-2

(148) . .(149)

(148) .2005 22

(149)

2000-1999

.

.

· _

-

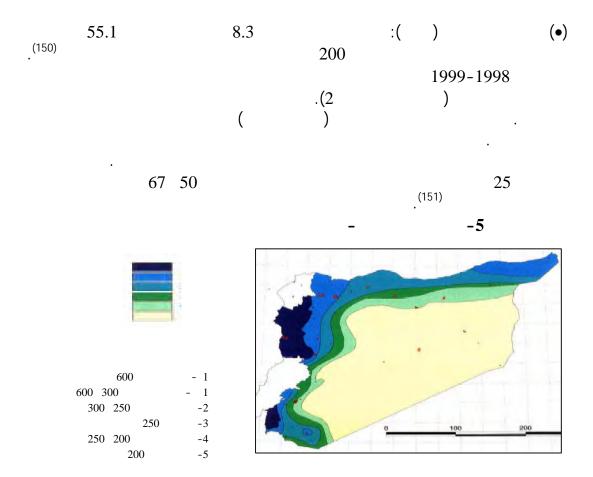
14.6 2.7 : () 40-30 50 . 600 300

. 20-10

7.1 1.3 : ()

. 250 البلد 9,9 1.8 : ()

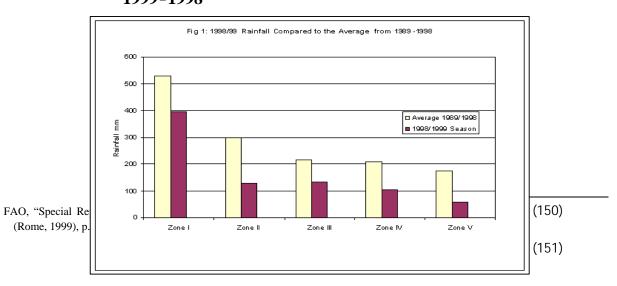
9,9 1.8 : ()
. 250-200



.FAO, "Country Pasture/Forage Resource Profiles: Syria" (Rome, 2001):

-2

1999-1998



.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Syrian Arab Republic" (Rome, 23 August 1999) : 21 475 (152)70 1997 ³ 1 438 1 000 I^3 .(153)2025 770 (154) 50 (155) 91 (156) 50 (152)(153)G. Somme and others, Rainfed Wheat Productivity with Supplemental Irrigation in Al-Hasakeh, Northern Syria (Aleppo, ICARDA and the General Commission for Scientific Agricultural Research Syria, 2005), p. 4. (154)Micro-catchment Water Harvesting for Improved Vegetative Cover in the Syrian Badia (Aleppo, ICARDA and the General Commission for Scientific Agricultural Research, Syria, 2005), p. 7. Abelardo Rodriguez, Hisham Salahieh, Raed Badwan and Hala Khawam, Groundwater Use and Supplemental (155) Irrigation in Atareb, Northwest Syria (Aleppo, ICARDA, 1999), p. 2. (156).2005

.E. DePauw, "Drought in WANA: six frequently asked questions", p. 2 (157)

.ESCWA, Enhancing Negotiation Skills on International Water Issues in the ESCWA Region, p. 3 (158)

1997 46

51 . (159) . 89

2000-1999 .

160 85 (160) /3 500 2000 /3

.

70

-

95 1.6 1984 .⁽¹⁶¹⁾ ..⁽¹⁶²⁾1984 303 500 1980

1999-1998 .1984

.(163) 5,5

.9 (159)

.C. Morris, "Drought leads to water row with Turkey", The Guardian Weekly, 10 May 2000, p. 5 (160)

.FAO, AQUASTAT Online Database (Rome, 2004), p. 3 (161)

Carter and others, "Agriculture" in Syria: A Country Study, Country Study Series, U.S. Government Printing (162) Office, 1988.

.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Syrian Arab Republic", p. 4 (163)

.(164) 24 76

·

380 000 1999 . .⁽¹⁶⁵⁾ 72 1998

40 1999 . (166) . (167) 28

•

8.3

(168)

/ 165 1999 (169)

.2 (165) .5 (166)

.FAO, "Drought conditions threaten food security of Syria's nomadic livestock producers" (167)

G. Somme and others, "Micro-Catchment Water Harvesting for Improved Vegetative Cover in the Syrian Badia" (168) (Aleppo, ICARDA, 1999), p. 28.

.6 (169)

.5

(164)

.FAO, "Drought conditions threaten food security of Syria's nomadic livestock producers" (170)

. (174) 25 20

(Oryx leucoryx) (Gazella subgutturosa marica)

. (175) Salsola vermiculata, Atriplex leucoclada, Artemisia herba-alba, Stipa barbata

.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Syrian Arab Republic", p. 13 (171)

.3 (172)

G. Somme and others, "Micro-catchment Water Harvesting for Improved Vegetative Cover in the Syrian Badia", (173) p. 6.

.7 (174)

FAO and the World Bank, *Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World*, (175) box 3.13, "Range rehabilitation in pastoral farming systems".

-

(70-60)

1998 30 1998 35

1999 .⁽¹⁷⁶⁾1997

2025-2002 2,2

.

(2002 23.5) 2000 1999 .

.FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Syrian Arab Republic", p. 4 (176)

.4 (177)

0.60 1.8-.(178) 32 .(179) 900 000 60 (180) 12 7 150 000 200 000 .(181) 4 300 3 300) 1999 65 .(182) 1999 1999 ESCWA, Survey of Economic and Social Developments in the ESCWA Region, 2001-2002 (E/ESCWA/ED/ (178) 2002/8), p. 5. .FAO, "FAO/WFP Crop and Food Supply Assessment Mission to the Syrian Arab Republic", p. 12 (179)

(180)

(181)

(182)

.12

.13

(183)

-1

•

.

(184)

(185)

³ / 0.10

-2

-

(186)

. (187) .

.E. DePauw, "Drought Early Warning Systems in West Asia and North Africa" (184)

(185)

.2005 / 28

.2005 / 27

(187) 28

.2005 / 28

1991-1990

58 1991-1990 .⁽¹⁸⁸⁾ .77 800 000 1991

.⁽¹⁸⁹⁾(6) -

The Republic of Yemen
Ministry of Agriculture & Impation
Agricultural Research & Edension Authority

Eastern Plateau

Plains

Plains

Plains

A BURN

.World Bank. Republic of Yemen Poverty Update (Washington, D.C., 11 December 2002), p. iii (188)

.A.A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, November, 2001) (189)

(2002 6) .http://www.fao.org/ag/agl/swlwpnr/reports/y_nr/z_ye/ye.htm (190) 300 50 (191) 500-300 (192)1 000 () 500 .(193) 200 2 400 (194) 50 .50 .(196) 800-500 (195) .FAO, "Yemen national report" (Rome, 6 June 2002), p. 9 (190) (191).FAO, "Yemen national report", p. 7 (192) .10 (193).A.A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, November 2001), p. 8 (194) (195) .6 7 (196).2005

-

206 500 2002 90 .(197) 1989 .(198) (199) 30 30 6 2 .(200) 8 (201)5 000 600 1992 .(202) .(203) 700 1999 . World Bank, "Country Brief: Middle East & North Africa Region (MENA) - Yemen" (Washington, D.C., 2005) (197)

.FAO, "Yemen national report" (202)

.13

.15

(198)

(199)

(200)

(201)

.UNDP, Sustainable Water Resources Management: Programme Outline, UNDP - Yemen, 9 July 1997 (203)

7

.2005

.15

3.2

29.5

. (208) 1981-1979 66 . (209) 54 2000 600 000 33 38 1991-1990 . (210) 1989 1991 34 . 1998-1997

1991-1990

M.H. Al-Qadhi, "Thirst for water and development leads to conflict in Yemen", *Choices, The Human Development Magazine*, March 2003 (New York, UNDP).

World Resources Institute (WRI), "Agriculture and Food - Yemen", EarthTrends Country Profiles, EarthTrends (205) Online Database, Washington, D.C., 2004, p. 1.

.A.A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, November 2001), p. 3 (206)

(207)

.2005 / 7

. World Resources Institute, "Agriculture and Food - Yemen", p. 1 (208)

.A.A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, November 2001), p. 3 (209)

.FAOSTAT Online Database (Rome, FAO, 2004) (210)

.(1989 1991 16)

(75) 53 .⁽²¹¹⁾

(212)

. (215) .

6.1

. 2002

•

.A.A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, November 2001), p. 3 (211)

. (212)

.FAOSTAT Online Database 2004 (213)

25

.A.A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, November 2001), p. 4 (214)

ESCWA, Review and Appraisal of Progress Made by Yemen in the Implementation of the New Programme of (215) Action for the Least Developed Countries for the 1990s (E/ESCWA/ED/2001/17).

(216)

A. Aw-Hassan, M. Alsanabani and A.R. Bamatraf, "Step forward, Yemen terraces", ICARDA *Caravan* 10, (216) (Aleppo, 1999), p. 1.

.(217)
92.8
(218)
.(220)
.(221)

.FAO, Terrastat Online Database, Rome, 2004 (217)

Abdulmalik Althawr, "Contribution to the Agriculture Sector Review in Yemen". Ministry of Agriculture and (218) Irrigation, Yemen, February 1999, p. 21.

(219)

.2005 / 7

(220)

.A.A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, November, 2001) (221)

. World Bank, "Country Brief: Middle East & North Africa Region (MENA) - Yemen" (Washington, D.C., 2005) (222)

. World Bank, Republic of Yemen Poverty Update (Washington, D.C., 11 December 2002), p. 20 (223)

"Yemen - Rainfed Agriculture and Livestock: Rural Poverty Alleviation Project", Project (224)
Information Document, World Bank, Washington, D.C., 2005.

(225)

.(226)2015-2002 3.6 49

30

25 42 (227) .(228) 40 3.8 .(229)

58 (230) 41 67 (231)

77 58 (232)

(225). "Country Brief: Middle East & North Africa Region (MENA) - Yemen"

.Republic of Yemen Poverty Update, p. 28 (226)

(227)

83

. "Country Brief: Middle East & North Africa Region (MENA) - Yemen" (228)

(229)

(230).Republic of Yemen Poverty Update, p. iv

> (231).v

(232).iii

88:

20 59 (234)

77) .

. 75 1991 1961 48.5 . (236)2002-1992

4.2 1980-1970 2.9 $(237)^2 2002$ 6.1 1991-1981

22 (238)

.ESCWA, Where do Arab Women Stand in the Development Process? A Gender-Based Statistical Analysis, p. 14 (233)

.A. A. Alabsi, "Country Pasture/Forage Resource Profiles: Yemen" (Rome, FAO, 2001), p. 7 (234)

World Bank, "Yemen - Rainfed Agriculture and Livestock: Rural Poverty Alleviation Project", Project (235) Information Document, World Bank, Washington, D.C., 2005.

J.P. Wilson and H.J. Bruins, "Food security in the Middle East since 1961" Jacob Blaustein Institute for Desert (236) Research, Ben-Gurion University of the Negev, Sede Boqer, Israel, 2005, pp. 2 and 4.

.4 (237)

.2005 / 7 (238)

.(239) 90 (240) 44 (242)12 .(243) 1991-1990 1991 () (239). World Bank, "Country Brief: Middle East & North Africa Region - Yemen" (240) (241) ESCWA, Review and Appraisal of Progress Made by Yemen in the Implementation of the New Programme of (242) Action for the Least Developed Countries for the 1990s, p. 29.

.2005 / 7

-70-

() () **(•)** 2005 2003 .(244) -1 1995 .2005 / 7 (244)

.

.

.(245)

100 000

-2

(246)

(247)

.2005

(245) (246)

.2005 / 7 -

(247)

.2005

05 / 7

I. Muharram, S. Nahdi and A.M. Bamatraf, "The National Agricultural Research System of Yemen", WANA (248) NARS Study (1999) – Yemen (Aleppo, ICARDA, 1999).

2000-1999) 2000-1999 . () () ():

.(249) -2 .(250) -3 () () () () **(•)**

.E. DePauw, "Drought Early Warning Systems in West Asia and North Africa" (249)

(250)

(251)

(252)

-5

(253)

(254)

--(255)

ISDR, Living with Risk: A Global Review of Disaster Reduction Initiatives (Geneva, Inter-Agency Secretariat of the United Nations International Strategy for Disaster Reduction, 2004).

United Nations Convention to Combat Desertification, "Early Warning Systems: report of the ad hoc Panel" (252) (ICCD/COP(4)/CST/4), Conference of the Parties, Committee on Science and Technology, fourth session, Bonn, December 2000.

ICARDA, "International network to help countries cope with drought", ICARDA *Caravan* 17 (Aleppo, December (253) 2002).

IUCN Centre for Mediterranean Cooperation and Global Water Partnership - Mediterranean, "Drought (254) Preparedness and Risk Management in the Mediterranean Region", paper presented by T.A. El Hassani at Water, Wetlands and Climate Change: Building Linkages for their Integrated Management, Mediterranean Regional Roundtable held in Athens in 2002 (Gland, Switzerland, International Union for the Conservation of Nature, 2002).

. United Nations Convention to Combat Desertification, "Early Warning Systems: report of the ad hoc Panel" (255)

(256)				
-				_
	-		•	
_		-2		
			(257)	
			. (257)	
(050)	•			
· (258) ·				
•				
	3			
			(259)	_
(260)				
·				
.E. DePauw, "D	rought early warning sy	stems in West Asia	and North Africa"	(256)
IUCN, Centre for Mediterranean Cooperation and	d Global Water Partn	ership - Mediterr	anean, "Drought	(257)
Preparedness and Risk Management in the Mediter Climate Change: Building Linkages for their Integrat				er, Wetlands and

(258)(259)(260)

-4

(261)

_____ ·

.(262)

.E. DePauw, "Drought in WANA: six frequently asked questions", ICARDA Caravan 17, December 2002 (261)

. American Meteorological Society, "AMS policy statement on meteorological drought", 1996 (262)

	_	_	
_	1	1	_

_____-2

.(263)

2001-1999

-1

(264)

IUCN Centre for Mediterranean Cooperation and Global Water Partnership - Mediterranean, "Drought (263) Preparedness and Risk Management in the Mediterranean Region", paper presented by T.A. El Hassani at Water, Wetlands and Climate Change: Building Linkages for their Integrated Management-Mediterranean Regional Roundtable, 2002.

(265)

-2

(266)

. (267)

-1

. (268)

-2

. American Meteorological Society, "AMS policy statement on meteorological drought", 1996 (265)

ISDR, *Living with Risk: A Global Review of Disaster Reduction Initiatives* (Geneva, Inter-Agency Secretariat of the United Nations International Strategy for Disaster Reduction, 2004).

. American Meteorological Society, "AMS policy statement on meteorological drought", 1996 (267)

(268)

			(269)
	·)	(
		3	
	·		
·			
	():	<i>(</i>)	

()

ICARDA, "Plant nutrition and agronomic practices: prerequisites for drought mitigation", ICARDA *Caravan* 17, (269) (Aleppo, December 2002).

()

ISDR. *Living with Risk: A Global Review of Disaster Reduction Initiatives* (Geneva, Inter-Agency Secretariat of the United Nations International Strategy for Disaster Reduction, 2004).

1_____

)) .(

2001-1999

)

```
(
                                )
(
                        )
                 )
```

(Wilhite)

		-1
•		-2
		-3
		-4
		-5
		-6
		-7
		-8
		-9
		-10

http://www.drought.unl.edu/plan/handbook/process.htm

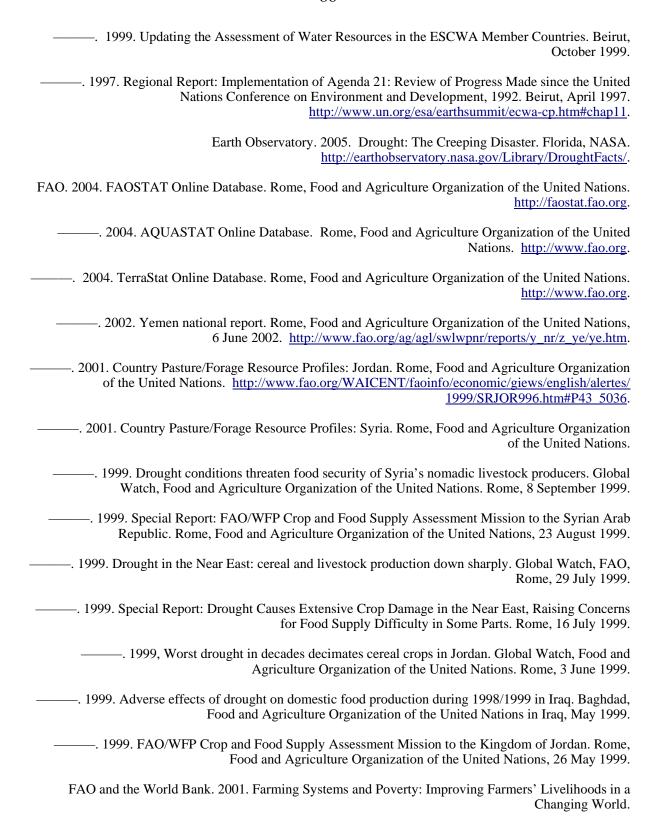
3

: -

	:
	;
(%)	:
	:
	:
	•
	·
	:
	·
	:
	:
:	<u> </u>
·	· .
	·
	:
	:
	:
	:
	:
	:
	:
	:
1	
	-
:	:
:	:
:	:
:	:
· _	·
:	
_	
	:
	·
1 000	:
1 000	•

	I
	;
() /	()
•	:
·	·
:	:
100 000 :	
100 000 .	
:	65
:	:
:	:
: ()	:
•	;
:	(Gini) :
;	:
1 000	
: 1 000	i i
	:
	/
	:
	·
	:
	:
	:
	:
	:
	:
	:
	·
	:

- Alabsi, A.A. 2001. Country Pasture/Forage Resource Profiles: Yemen. Rome, Food and Agriculture Organization of the United Nations, November 2001.
- Al-Qadhi, M.H. 2003. Thirst for water and development leads to conflict in Yemen. *Choices, The Human Development Magazine*. New York, UNDP, March 2003. http://www.undp.org/dpa/choices/2003/march/yemen.html.
- Althawr, A. 1999. Contribution to the Agriculture Sector Review in Yemen. Ministry of Agriculture and Irrigation, Yemen, February 1999.
 - American Meteorological Society. 1996. AMS policy statement on meteorological drought. http://www.ametsoc.org/policy/drought.html.
 - Aw-Hassan, A., Alsanabani, M., and A.R. Bamatraf. 1999. Step forward, Yemen terraces. ICARDA *Caravan 10*. Aleppo, Syrian Arab Republic.
- Carter and others. 1988. Agriculture. In Syria: A Country Study. Country Study Series, U.S. Government Printing Office, 1988. http://www.country-studies.com/.
 - CLIMAS. 2004. Drought planning and mitigation: social vulnerability. University of Arizona, Climate Assessment for the Southwest, The Institute for the Study of Planet Earth. http://www.ispe.arizona.edu/climas/research/drought/social.html.
 - DePauw, E. 2004. Drought early warning systems in West Asia and North Africa. Aleppo, Syrian Arab Republic, International Center for Agricultural Research in the Dry Areas (ICARDA).
- ——. 2002. Drought in WANA: six frequently asked questions. ICARDA Caravan 17, December 2002.
- ——. 2001. An Agro-ecological Exploration of the Arabian Peninsula. Aleppo, Syrian Arab Republic, ICARDA, December 2001.
- De Sherbinin, A., and V. Dompka, eds. 1998. Water and Population Dynamics: Case Studies and Policy Implications, Case study: Jordan, population dynamics in arid regions: the experience of the Azraq Oasis conservation project by F. Fariz and A. Hatough-Bouran. American Association for the Advancement of Science. http://www.aaas.org/international/ehn/waterpop/jordan.htm.
 - Economic and Social Commission for Western Asia (ESCWA), Federal Institute for Geosciences and Natural Resources, Germany (BGR), and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH. 2004. Enhancing Negotiation Skills on International Water Issues in the ESCWA Region. Beirut, 2004.
- ESCWA. 2004. Where do Arab Women Stand in the Development Process? A Gender-Based Statistical Analysis.
 - ———. 2002. Survey of Economic and Social Developments in the ESCWA Region, 2001-2002 (E/ESCWA/ED/2002/8).
 - ———. 2001. Review and Appraisal of Progress Made by Yemen in the Implementation of the New Programme of Action for the Least Developed Countries for the 1990s (E/ESCWA/ED/2001/17).
 - ———. 2000. Application of Sustainable Development Indicators in the ESCWA Member Countries: Analysis of Results (E/ESCWA/ED/2000/4).



- Hayes, M. 2005. What is drought? Drought indices. National Drought Mitigation Center, University of Nebraska-Lincoln, 2005. http://www.drought.unl.edu/whatis/what.htm.
- Hazell, P., Oram, P., and N. Chaherli. 2001. Managing droughts in the low-rainfall areas of the Middle East and North Africa. Washington, D.C., International Food Policy Research Institute, September 2001.
 - Huss-Ashmore, R. 1997. Local-level data for use as early warning indicators. Philadelphia, University of Pennsylvania. Internet Journal of African Studies, vol.2, March 1997. http://www.bradford.ac.uk/research/ijas/ijasno2/ashmore.html.
 - International Center for Agricultural Research in the Dry Areas (ICARDA). 2004. Poverty, Food Systems and Nutritional Well-Being of Children in North West Syria. ICARDA Development Seminar Series.

 Aleppo, Syrian Arab Republic.
 - ——. 2002. International network to help countries cope with drought. ICARDA *Caravan* 17, Aleppo, December 2002.
 - ——. 1998. The West Asian Joint Program for Drought Preparedness and Mitigation of the Effects of Drought, Sub-Regional Program on Combating Desertification and Drought in Western Asia. Aleppo Syrian Arab Republic, November 1998.
- ——. 1998. Drought preparedness and mitigation of the effects of drought. Paper presented at the Expert Group Meeting for the Preparation of the Sub-Regional Action Program on Combating Desertification and Drought in Western Asia. Muscat, Oman, September 1998.
 - ILO. 2004. Global Employment Trends. Geneva, International Labour Organization. http://www.ilo.org/public/english/employment/strat/download/trends.pdf.
 - Interview with Abdel Nabi Fardous, Director General, National Center for Agricultural Research and Technology Transfer, Amman, Jordan, 22 March 2005.
 - Interview with Safa' Mazaher, GIS Lab Administrator, National Center for Agricultural Research and Technology Transfer, Amman, Jordan, 22 March 2005.
 - Interview with Fayez Bataineh, Ministry of Water and Irrigation, Amman, Jordan, 21 March 2005.
 - Interview with Abdulkader Ali, Project Director for Geo-Environmental Information Project, Advisory Services on the Development and Use of Geo-Environmental Information Integrated Water Resources Management, Sana'a, Yemen, 7 March 2005.
 - Interview with Ibrahim Thabet, Director, FAO-Yemen, Sana'a, Yemen, 7 March 2005.
 - Interview with Isma'il Muharram, Chairman of Agricultural Research and Extension Authority, Sana'a, Yemen, 7 March 2005.
- Interview with Naji Abu Hatim, Senior Rural Development Specialist, Department of Rural Development, Water & Environment, World Bank, Sana'a, Yemen, 7 March 2005.
 - Interview with Jamal Jamaleddin, Director of Training, Research, and International Projects, Ministry of Irrigation, Damascus, Syrian Arab Republic, 28 February 2005.
 - Interview with Akhtar Ali Rana, Water Resources Engineer. Natural Resource Management Program at ICARDA. Aleppo, 27 February 2005.

IPCC. 2000. IPCC Special Report on the Regional Impacts of Climate Change: An Assessment of Vulnerability, chap. 7, Middle East and Arid Asia. Geneva, Intergovernmental Panel on Climate Change. http://www.ipcc.ch.

ISDR. 2004. Drought—Living with Risk: An Integrated Approach to Reducing Societal Vulnerability to Drought. ISDR Ad Hoc Discussion Group on Drought. Geneva, International Strategy for Disaster Reduction. http://www.unisdr.org/eng/about isdr/bd-lwr-2004-eng.htm.

———. 2004. Living with Risk: A Global Review of Disaster Reduction Initiatives. Geneva, Inter-Agency Secretariat of the United Nations International Strategy for Disaster Reduction.

ISDR and WMO. 2004. Water and disasters: Be informed and be prepared. Geneva.

IUCN (International Union for the Conservation of Nature and Natural Resources). 2002. Drought Preparedness and Risk Management in the Mediterranean Region. Paper by T.A. El Hassani presented at Water, Wetlands and Climate Change: Building Linkages for their Integrated Management at the Mediterranean Regional Roundtable held at Athens. Gland, Switzerland.

Jordan – vegetation and precipitation. 1978. Jordan Maps, Perry-Castaeda Library Map Collection, University of Texas at Austin, Austin Texas, USA: 1978. http://www.lib.utexas.edu/maps/jordan.html.

Jordan facing water shortage. 1998. US Water News Online, July 1998.

Jordan announces summer water rationing plan for parched kingdom. 2000. Associated Press, 26 April.

Knutson, C., Hayes, M., and T. Philips. 1998. How to Reduce Drought Risk. Western Drought Coordination Council, 1998. http://www.drought.unl.edu/plan/handbook/risk.pdf.

Malakouti, M. 2003. The role of zinc on the yield and grain fortification of wheat in the calcareous soils of dry lands. Paper presented at the Seventh International Conference on Development of Drylands.

Tehran, ICARDA, September 2003.

Morris, C. 2000. Drought leads to water row with Turkey. The Guardian Weekly, 10 May 2000.

Muharram, I., Nahdi, S., and A.M. Bamatraf. 1999. The National Agricultural Research System of Yemen. WANA NARS Study (1999)-Yemen. Aleppo, ICARDA.

NDMC. 2005. Spotting drought before it's too late. National Drought Mitigation Center, University of Nebraska-Lincoln. http://www.drought.unl.edu/pubs/spotdrt.pdf.

———. 2005. What is drought? National Drought Mitigation Center, University of Nebraska-Lincoln. http://www.drought.unl.edu.

PPEW. 2005. Basics of Early Warning. Platform for the Promotion of Early Warning, Bonn, Germany. http://www.unisdr.org/ppew/whats-ew/basics-ew.htm.

Rinehart., R., and others. 1980. Agriculture. In Jordan: A Country Study. Country Studies Series, U.S. Government Printing Office. http://www.country-studies.com/jordan/agriculture.html.

Rodriguez, A., and others. 1999. Groundwater Use and Supplemental Irrigation in Atareb, Northwest Syria.

Aleppo, ICARDA.

