



The Ministry of Ecology and Natural Resources
State Hydrometeorological Service



2007 DROUGHT IN THE REPUBLIC OF MOLDOVA

Reporter – Prepelita Natalia
Prepared by
Valeriu Cazac, Director SHS
Ilie Boian, UNCCD Focal Point
Natalia Prepelita – Secretary of UNCCD

Republic of Moldova



Republic of Moldova



Key Indicators

Total Population	3.58 million people (in 2007)
Population Density	118 people per sq. km
Total Area	33.8 sq. km
Total Agricultural Area	1974 thou ha
Arable Land	1651 thou ha
Area under cereals & leguminous crops	917,4 thou ha
Area under multiannual plantations	246,8 thou ha

Introduction

Administrative-territorial divisions of Moldova includes 32 regions (rayons) with 3 cities and 60 towns, 917 primaria with a total of 1575 villages.

Currently, the agro-food sector provides approximately 30% of country's GDP, of which 15,1% is generated by agriculture.

Out of the total of 1974 thousand hectares of agricultural land, 86,5 percent is in private ownership. 40,7% of the private land is owned by 390,380 individual farmers.

Average plot size is about 1,65 hectare, including:

- 1,42 ha under annual crops (86%)
- 0,22 ha under perennial crops (14%)

An area of 879,2 thousand hectares or approximately 52,3% of the total agricultural land is used by 1883 agricultural corporative units, such as: LLCs, JSCs, ag coops, peasant farms (that have over 100 ha).

DROUGHT 2007



In the last two decades droughts have been registered more frequent and they become more severe.

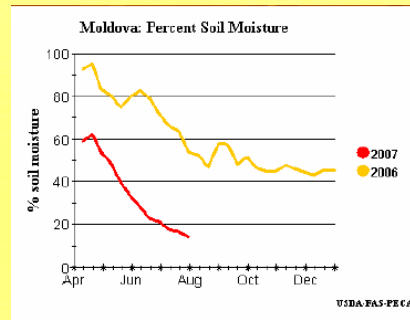
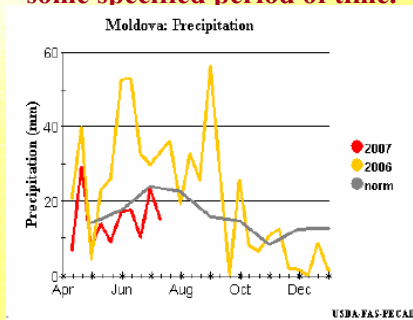
During 1990 – 2007 period on the territory of the Republic of Moldova have been registered 9 years with droughts (1990, 1992, 1994, 1996, 1999, 2000, 2001, 2003, 2007) that caused crop decrease.

In 1990 1990, 1992 and 2003 the droughts lasted for the whole vegetation period (IV – IX months), in the rest years the drought has been registered in summer.

Agricultural drought

Agricultural drought is defined more commonly by:

- lack of soil water necessary to support crop growth, including forage;
- significant deviation from normal precipitation and soil humidity over some specified period of time.



The above data indicate that lack of precipitation for a long period of time led to significant reduction of soil humidity, having a negative impact on crop growing processes.

The negative impact of the lack of humidity is particularly severe on the black soils (chernozem).

This fact should be seriously considered in the future in the process of drought assessment in general and drought risk reduction in particular .

The lack of rainfall from May-July 2007 during the critical crop growing period coupled with excessive temperatures caused varying degrees of crop damages, to cereal crops in particular.

Drought assessment by the affected areas

Years	Spring		Summer		Autumn	
	The affected area, (%)	The type of drought	The affected area, (%)	The type of drought	The affected area, (%)	The type of drought
1946	100	catastrophic	33	extreme	-	-
1963	40	extreme	7	local	93	catastrophic
1967	60	catastrophic	40	extreme	93	catastrophic
1982	60	catastrophic	-	-	93	catastrophic
1986	100	catastrophic	13	big	100	catastrophic
1990	7	local	67	catastrophic	60	catastrophic
1992	27	big	60	catastrophic	40	extreme
1994	87	catastrophic	40	extreme	100	catastrophic
1996	68	catastrophic	49	extreme	44	extreme
2000	75	catastrophic	55	catastrophic	49	extreme
2003	86	catastrophic	61	catastrophic	26	very big
2007	75	catastrophic	80	catastrophic		

Precipitation regime

- in the period 1.09.2006 - 20.07.2007
the amount of precipitations represented
- **50-75%** of climatic norm;

- autumn 2006 – (65-105%) of norm
- winter 2006-2007– (70-110%) of norm
- March-April 2007 – (70-125%) of norm
- **May-June 2007 – (30%) of norm.**

Continuous periods without precipitations

- 28-33 days in the central part
- 33–38 days in the southern part
- 53–73 days locally (Vulcănești, Basarabasca)

Air humidity regime (Aprlil-June 2007)

- days with relative humidity of the air $\leq 30\%$ - 55-78 days, that is 3 - 4 times higher than climatic norm.

Productive humidity reserves in soil (mm) in the sunflower fields (at 18 July 2007)

Stations and posts	The predecessor	18.07.2007				Multiannual averages
		In soil (cm)				
		0-10	0-20	0-50	0-100	0-100
Edineț	autumn crops	9	19	44	82	81
Glodeni	legumes	2	2	4	6	96
Șoldănești	hoeing crops	0	0	6	43	108
Rezina	autumn crops	2	7	24	48	108
Fălești	hoeing crops	0	0	0	0	96
Cornești	-“-	0	0	0	5	96
Anenii-Noi	-“-	1	2	7	21	115
Ștefan-Vodă	hoeing crops	0	0	0	16	97
Ceadâr-Lunga	-“-	0	0	13	35	112
Cahul	autumn crops	1	3	10	34	112

Thermal regime

Winter – average temperature 1-3°C, that is 4-5°C higher than the norm - record

Spring – average temperature 11-13°C, that is 2-3°C higher than the norm - record

May July – average temperature 21-23°C, that is 3-4°C higher than the norm - record

Number of days with high temperatures (May-July 2007)

- $\geq 30^{\circ}\text{C}$ – number of days (36-45)
norm – (12-15)
3 times higher
- $\geq 35^{\circ}\text{C}$ - number of days (10-12)
norm – 1
11-12 times higher

**On 21.07.07 – the temperature registered - 41,5°C
(Camenca) - record**

The drought of 1946

(May - September)

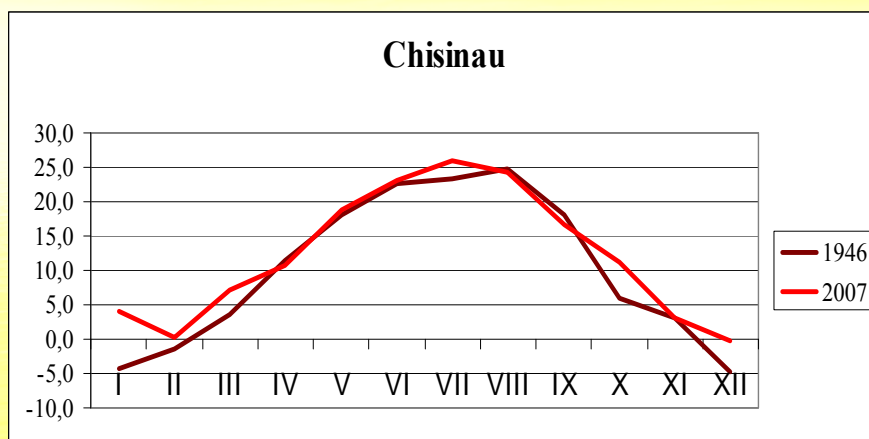
- the quantity of precipitations

- **50%** of norm;

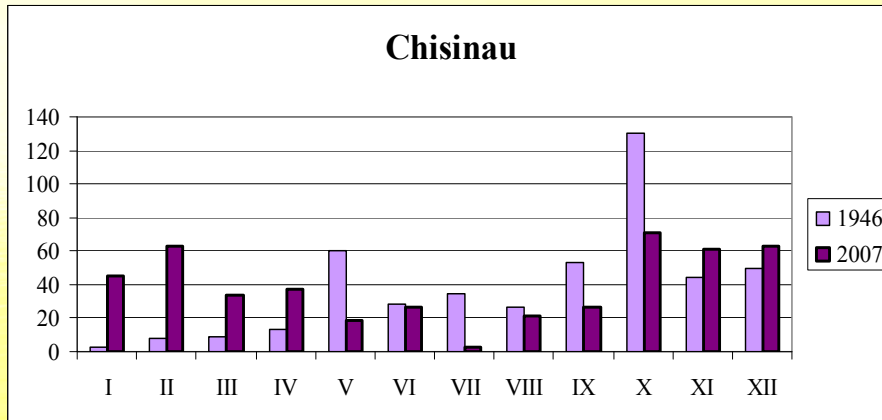
- the average air temperature

- **2-3°C** higher than the norm;

Average monthly air temperature (°C) for 1946 and 2007



Precipitation quantity (mm) for 1946 and 2007



Consequences









Current situation

Estimated losses for:

- cereal crops of 1st group - 132 million USD (1.6 billion MDL) [1].
- vegetables and fruits - 550 million USD (6.67 billion MDL).
- livestock sector – 305 million USD (3.7 billion MDL).
- total agro-food sector (with the exception of viticulture) - 987 million USD (11.97 billion MDL).

Total deficit of financial resources -211.8 million USD, including for:

- Late crop harvesting – 130 million USD (1.576 billion MDL);
- Harrowing – 30.3 million USD (367 million MDL);
- Soil preparation and autumn crop seeding – 11.8 mil USD (143.3 mil MDL);
- Seeding of 80,000 hectares – 39.6 million USD (480 million MDL).

About 45% of population will suffer from shortages of winter wheat, barley, maize, sunflower and sugar beet in 2008.

1 \$US = 12,12 MDL (according to NBM on 26.07.07).

Undertaken actions

The Government of Moldova has approved the allocation of 16.5 million USD (200 million MDL) to cover the costs incurred by farmers for soil cultivation and autumn crop seeding (the 2008 harvest), but these resources are not sufficient for ensuring basic needs and relieving the drought impact .

If immediate external assistance is not secured, there is a high danger that the agricultural fields will be left un-seeded or the seeding of autumn crops will take place too late and by use of poor quality seeds, these factors negatively influencing the 2008 harvest. The prospects represent a downward spiral in which recovery – even with excellent weather – will be slow, uncertain and costly in terms of human welfare. For many households, the only remaining asset with market value is that 1.6-ha plot of land, the sale of which would result in migration to urban areas or abroad.

Undertaken actions

The Government of Moldova kindly requires, as a matter of urgency, the support of international community in rehabilitating the crop and livestock sectors, particularly the livestock genetic fund, and presents the “shopping list”.

Soil preparation for the seeding of autumn crops (wheat, barley and raps) usually starts in July, culminating in mid-September. Spring crop works start in March, with harvesting taking place in August. Therefore, the preliminary preparation steps have to start at the beginning of September 2007.

Undertaken actions

Emergency assistance

A. Awareness, Preparation and Management

- Preparation and submission to the donor community of the shopping list for requesting urgent assistance.
- Support on preparation of short , medium and long term activity plans oriented to the prevention of the level of the damage caused by drought.
- Identification of rayons, primarias and villages, as well as setting up criteria for the urgent distribution of agricultural inputs and food aid to direct and indirect beneficiaries.
- Development of the activity plan on coordination of receiving, storekeeping, distribution and monitoring of agriculture assistance and the food aid provided by donors and other organizations.
- Support on logistics and distribution.

B. Request for emergency assistance on agriculture inputs and food aid

Actions needed to take place

Medium term assistance

- Development of Drought risk reduction Policy and Capacity building
- Creation of an Early Warning System to optimize public behavior in case of disaster, improvement of forecasting capability, which require upgrading of the agrometrological service and strengthening of the State Department of Emergency Situations.
- Creation of a modern agro-technologic system for cultivation of ag plants under insufficient humidity, implementation of varieties with enhanced resistance to weather changes.
- Agriculture Insurance includes support in the form of a combination of index based weather insurance for broad based threats, such as drought and frost and more traditional insurance schemes for more localized threats such as hail. Farmers belong to the strata that are more likely to be disposed to the danger of poverty, since after every natural disaster they lose most of their crop or the entire crop, and these results in their inability to further cultivate their lands and provide their animals with sufficient feed. This is the reason why considerable parts of farmers either add the number of the poor or leave the village seeking for a better future in cities and outside their countries.

Actions needed to take place

Long term assistance

- **Rehabilitation and development of Irrigation system:** is the optimum investment to mitigate drought damages. Absence of irrigation systems reduces the seed production up to a reproduction ratio of 1:10. In case of irrigation the reproduction ratio could be doubled, and the expected yields of seed would be about 4.5 t/ha which is about 2 t/ha more then current average yield and will ensure an additional income of 1000 US\$ per hectare to seed producers.
- **Integrated Crop Management** includes higher requirements toward crop rotation, propagation of good agricultural practices, utilization of high-yielding plant varieties and seeds that have higher biologic qualities. These and other measures will reduce the negative impact of extreme climatic conditions (drought, frost, hail), and the magnitude of long-term degradation processes[1].

[1] The Government of Moldova being worried about the current situation of low level of soil fertility, trough the Decision 636, in May 2003 approved Degraded Land Capitalization and Soil Fertility Increase Program, that indicates the cost of program implementation to be about 925 million USD.

Donor's assistance, relevant meetings

- 6th Donors' meeting on drought, 7 December 2007
 - List of participants
 - Update on the actions undertaken so far by the Moldovan Government in response to the drought in Moldova (presented by Mr. Anatolie Gorodenco, Minister of Agriculture and Food Industry) (Rom)
 - Update on the UN joint response to drought in Moldova and future plans (presented by Mr. Serghei Russu, Office of the UN Resident Coordinator)
- -
- 5th Donors' meeting on drought, 15 October 2007
 - Emergency Seed Relief Distribution Presentation of the Minister of Agriculture Mr. Gorodenco
 - Relief and Technical Assistance Response to the Drought in Moldova: United Nations - Moldova
 - Monitoring the supply of seeds, fertilizers and gas National Agency for Rural Development (ACSA) (Rom)

Donor's assistance, relevant meetings

- 4th Donors' meeting on the drought situation in Moldova, 7 September 2007
- -
- Donors' Meeting - Debriefing on UN FAO/WFP Crop and Food Security Assessment Mission to Moldova, 22 August 2007
 - Agenda
 - List of Participants
- -
- Second donors' meeting on the drought situation in Moldova, 3 August 2007
- -
- Ad-hoc donors' meeting on the drought situation in Moldova, 23 July 2007
- -

*Regional Technical and Scientific
Conference on the role of the
National Meteorological and
Hydrological Services in prevention
and mitigation of natural hazards
impact,*
9-10 October 2008, Chisinau,
Republic of Moldova

Thank you for attention!

www.meteo.md