## THE STATUS OF SOIL EROSION IN ROMANIA

### Prof. dr. ION IONITA "Alexandru Ioan Cuza" University of Iasi



Image © 2007 TerraMetrics

Bulgaria Streaming ||||||||| 100%





### Total erosion by land-use in Romania (Motoc M., 1983)

No	Land-use	Total erosion			
		million t/yr		%	
1	Arable	28.0	26.2	24.7	22.3
2	Pasture	45.0	42.2	39.6	35.7
3	Vineyard	1.7	1.6	1.5	1.2
4	Orchard	2.1	2.0	1.8	1.7
5	Unproductive (Abandoned land as gullies)	29.8	28.0	26.4	23.6
	Agricultural land	106.6	100.0	-	-
	Woodland	6.7	-	6.0	5.3
	Total	113.3	-	100.0	-
	River bank and localities erosion	12.7	-	-	10.2
Total		126.0	-	-	100.0



### Total erosion by types of processes (Motoc M., 1983)

No	Process	Total erosion		
		million t/yr	%	%
1	Soil erosion	61.8	54.5	49.0
2	Gully erosion	29.8	26.4	23.6
3	Landslides	15.0	13.1	11.9
4	Gully erosion and landslides in woodland	6.7	6.0	5.3
	Total	113.3	100.0	-
	River bank and localities erosion	12.7	-	10.2
Total		126.0	-	100.0



# Environmental threats:

- Soil erosion
  - Gullying
  - Landslides
- Sedimentation

### LAND DEGRADATION OVER THE LAST TWO CENTURIES IN THE MOLDAVIAN PLATEAU - ROMANIA

No.	Stage	Features
1.	Till 1829	Forest was dominant + Grazing clearing mostly
2.	1829 = crossing year	Adrianopol Treaty
3.	1829 - 1899 A preparing stage for future land degradation	The most dynamic change in the Romanian landscape: - Sharp increase of the cultivated land in Moldavia: 6 % in 1829, 19 % in 1862 and 36 % in 1893 - Collapse of the forest since 1864 Land Reform
4.	1900 - 1920 A transitory stage	<ul> <li>Cultivated land in Romania = 48%</li> <li>Extension of the up and down hill farming</li> <li>First remarks on land degradation</li> </ul>
5.	1921-1970 The climax stage of land degradation	<ul> <li>No significant change in land use</li> <li>1921 - Land Reform</li> <li>Severe up and down hill farming under small plots</li> <li>Improper road network</li> <li>1962 - Co-operativization Act</li> <li>Land degradation peak during '60s</li> </ul>
6.	1971 - 1990 Decreasing tendency of the land degradation	<ul> <li>Extention of the conservation practices and contour farming in huge agricol units</li> <li>Land use stratification in Moldova: cropland 57%, pastures 16% and forest 15%</li> </ul>
7.	<b>1991 - 2010</b> Revival of land degradation	<ul> <li>Land Act No. 18 / 1991</li> <li>Up and down hill chopping and farming is on the screen again</li> </ul>

## Forest distribution in the Tutova Rolling Hills (*Poghirc, 1970*)



### Traditional up and down hill farming, Pereschiv basin – Tutova Rolling Hills

### **Experimental runoff plots at Perieni-Barlad, Eastern Romania**



#### Mean monthly runoff under fallow and maize plots at Perieni, Romania (1970-1999)

### Mean monthly soil losses under fallow and maize plots at Perieni, Romania (1970-1999)





## Valcioaia basin, Falciu Hills, May 10, 2005

With the States





Distribution of gullies in the Moldavian Plateau, Romania (Radoane et al., 1992 and 1995)



## **Continuous gullies** Valcioaia basin, Falciu Hills, May 10, 2005

Gully head advance in the upper Banca Basin, Falciu Hills over the period 1953 - 1988 (Measurements based on local information, aerial photogrammes and topographic surveying)





Central Moldavian Plateau Vaslui catchment (42,352 ha, from which 29% is under forest), Solesti reservoir, 26 July 2007



Ada

# Relationship between the mean annual sedimentation rate and drainage area within the Tutova Rolling Hills, Romania



## **SOIL CONSERVATION**

 Agricultural land subjected to water erosion averages 6.4 mil ha (42.6%) of the total.

 By the end of 1989, as much as 2.2 mil ha, equating to 30% of agricultural land at risk of erosion, was adequately treated with conservation measures.

## Development of the Conservation Practices in Romania (1944 – 2000)



Tarina Valley – Barlad Plateau, The Central ResearchStation for Soil Erosion Control Perieni – Barlad, Romania

### **Conservation practices in the upper Crang Nou basin (30ha), the Moldavian Plateau of Eastern Romania (Ionita I.,1990)**



The new Land Act No. 18/1991 includes two provisions that do not encourage the extension of soil conservation practices

One of these stipulates that land reallotment has to be done as a rule in the old locations

## The second provision refers to the successors' right up to the fourth degree $\rightarrow$ 46 mil plots

# Traditional up and down hill farming is on the screen again

## Lower Elan basin

### laura – Tomesti, 22 May 2009





### **Upper Racatau basin under conservation practices,May 1985**

Depth distribution of 137 - Caesium and silty + clay content in the Bibiresti reservoir, upper Racatau Basin, Romania (May 13, 1997)





## Hereclean, Sălaj County (06 June 2009)

### Marcu's Valley SC R-Agro Falciu - 28 April 2007

