

**ELEMENTS OF INTEGRATED ECOLOGICAL MONITORING
WITHIN SOME HYDROGRAPHIC BASINS IN THE CODRII
PLATEAU OF THE REPUBLIC OF MOLDOVA**

Valentina ANDRIUCĂ

Technical University of Moldova

In promoting of Sustainable Agriculture today it is necessary to combine complex research in terms of: knowledge of the economic production system; characteristic and enhancement of the natural and energy resources used; surveillance of valuable ecosystems influenced by anthropogenic/agricultural activities; qualitative assessment of environmental factors; highlighting ecological stability and sources of agricultural and rural impact; recommending agricultural activities appropriate to traditions and available resources and, last but not least, caring for the health of the population.

The complex agroecological characteristic of rural resources gives greater precision and safety to the expected economic activities, allows the forecasting of sustainability indicators by: assessing the state of the environment (water, air, soil, biodiversity, landscape, product quality); examination of the pressure of anthropogenic activities on environment and agrolandshaft (through management practices and resource use); application of agroecological monitoring elements, according to the applicative needs. Suitability of soils for irrigation, qualitative highlighting

of soils, irrigation water, sources of natural and anthropogenic pollution, which will significantly influence natural resources and quality of agricultural crop development, product quality are very current and necessary in sustainable agriculture. Currently, the informational role of soil cover quality in avoiding risks of water use in sustainable agriculture is poorly applied. During 2010 - 2024, various localities, multiple areas and lands with various soil cover were investigated, practically in all 12 geomorphological districts (after I. Gorbunov, 1961, cited after A. Ursu, 2011), agricultural areas - North, Center and South.

In order to qualitatively assess the drinking water and for irrigation purposes, water from various sources – mine wells and artesian wells, springs, surface waters were collected and evaluated qualitatively, simultaneously with the assessment of the soil cover for the foundation of sustainable agroecosystems. The researches were carried out on polygons of the hydrographic basins: large rivers – Prut (Grozești; Valea Mare) and Dniester (Slobozia Dușca; Vadul lui Vodă); small rivers – Răut (Mălăiești; Clișova), Bâc (Trușeni; Roșcani; Gura Bâcului); Ișnovăț (Suruceni); Ichel, Cula, Culișoara (Hârcești); Cula (Morozeni; Ghetlova) and others. Given that the research was carried out on a diverse spectrum of soil cover, types of water, which differed qualitatively both by sources of origin and by chemistry, including research within background monitoring (Scientific Reserve "Codrii), it was possible to highlight some specific ecological laws of water quality within the Prut and Dniester river basins, of small rivers in Moldova: Bâc (districts Călărași, Strășeni, Anenii - Noi); Ișnovăț (Ialoveni, Suruceni); Răut (Orhei, Mălăiești); Cula (Hârcești, Ungheni) and others. There were highlighted some factors of natural and anthropogenic influence on water chemistry, there were evaluated the possibilities of irrigation of soils in concrete conditions of soil cover structure, according to irrigation indices determined and recommended in the Republic of Moldova, soil quality at the level of type, subtype, gender, morphometric, physico-chemical characteristic and others. Research has shown a significant differentiation of water quality in Ungheni district: mineralization (820-2040 mg/dm³); sodium content (50-221 mg/dm³); calcium (54-299 mg/dm³), magnesium (37-166 mg/dm³); hardness (8.8-21.8 me/dm³). The greatest variability in water quality in mine wells was highlighted in Hârcești, Ungheni district. The village is crossed by three small rivers - Cula, Culișoara and Ichel. Here the soil cover (total 4378.02 ha) includes 55 contours, very diverse pedogenetically, including soils with different degree of erosion (33.6%, arable), salinization (12%), landslides (24.8ha) and others. Grozești Microdistrict, Nisporeni district is a specific Microdistrict, the warmest and most arid in the central area of the Republic

of Moldova, being a relative depression, weakly dismembered, with quaternary, clay-clayey rocks. The soil cover of the microdistrict consists of ordinary chernozems - 28.9%, carbonate chernozems - 12.7%, including medium and heavily eroded ones - 13%, destroyed by landslides - 14.4%, alluvial soils occupy 11.2%. In Grozești microdistrict are registered 158 areas of soils, with an average surface of approx. 47,1ha. Waters with favorable irrigation coefficients for application are highlighted. The water of the first terraces of the Prut River in the Grozești Microdistrict is suitable for irrigation and of a better quality, compared to the water of the terraces of small rivers. The characteristic of the soil cover, influenced by the quality of rocks of solification, relief and microrelief, the factors of stability and ecological instability of lands and geomorphological units in the Republic of Moldova significantly influence the quality of water from mine wells, surface waters and groundwater too. Elements of integrated ecological monitoring regarding agroecological monitoring were highlighted.