

The Influence of Agriculture on Water Quality

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Abstract – the work is dedicated to the issues of analysis of the quality state of surface-water in the Lviv area, to comparing of mean values of indexes of quality of 2014 to the corresponding mean values of indexes of quality of water last year.

Key words – mean values of indexes, coefficient of muddiness, maximum permissible concentration (MPC), biological consumption of oxygen (BCO₅), chemical consumption of oxygen (CCO), mineralization, nitrates.

I. Introduction

Unrefined flows of agricultural production are one of the sources of contamination of waters. Sewer water carry in itself dangerous compounds, morbid microorganisms, insecticides and herbicides, biogens that enter in the complement of fertilizers.

In the riverheads of the rivers of the Lviv area look after contamination of the rivers, that creates inter-regional and international problems. On the general of superficial water resources in area of negatively such factors influence: upcast in the reservoirs of unrefined and cleared not enough flows of agriculture and industry, contamination of surface-water by mining - extracting enterprises, unsystematic and out-of-control chemicalization of agriculture, absence of bank-protection zones and off-shore stripes on water objects, large thrown open of soils, regulation of river-bed of the rivers, failure to observe of the sanitary-hygienic state of rural courts and unsettled state of dumps of domestic waste in settlement. Quality of surface-water of flat part of territory of Ukraine depends on the amount of effluents and degree of their cleaning, charges of water, atmospheric precipitations, superficial agricultural and to the flow from the urbanized territories. A superficial agricultural flow consists of superficial flow from the thrown open territories, drainage flow, superficial flow from territories of stock-raising complexes.

II. The quality state of surface-water of the Lviv area in 2014

In 2014 the laboratory of monitoring of waters and soils of Lviv was quarterly execute the analyses of quality of surface-water of the Lviv area in 17 створках, from what the Western Bug is in a pool, 8 - in a pool Dniester, 3 - in the pool of Syan. The estimation of quality of water was carried out in obedience to the coefficient of muddiness.

The mean values of indexes of quality of water in 2014 were compared to the corresponding mean values of indexes of quality of water last year, that it is resulted on image 1-4. The change of quality of water in the points of

supervisions depends on amount and quality of effluents of enterprises, unorganized flows, meteorological factors, hydrological terms of the rivers during sampling of water and others like that.

On the figure 1 exceeding over of level of MPC is brought for BCO₅ for pools year of Lviv Region, in particular maximal values are got for range in the p. of Kamjanopil (16,5 times), and minimum - for range the Western Bug - city Sokal - 1,0 times.

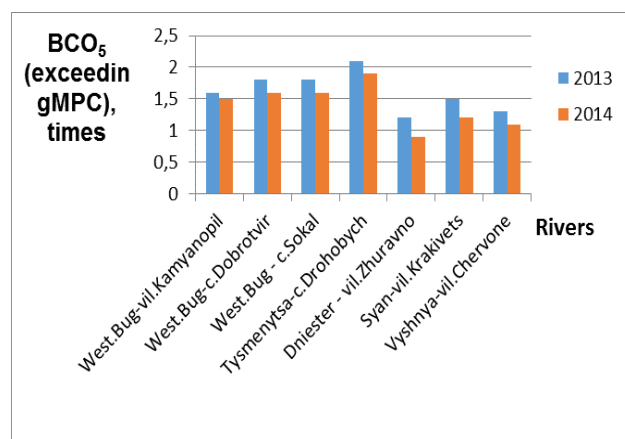


Fig. 1. The exceeding MPC of BCO₅ for river basins of Lviv region

On the figure 2 exceeding over of level of MPC is brought for CCO for pools year of Lviv Region, in particular maximal values are got for range in city Drohobych (2,1 times), and minimum - for range there is the Dniester – village Zhuravno - 1,3 times.

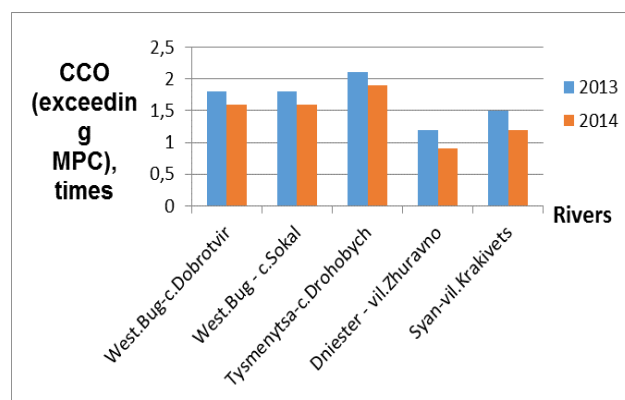


Fig. 2. The exceeding MPC of CCO for river basins of Lviv region

On the figure 3 exceeding over of level of nitrates is brought for pools year of Lviv Region, in particular maximal values are got for range in Sambir (15 times), and minimum – for range the Vyshnja is a village Chervone - 0,8 time

On the figure 4 exceeding over of level of mineralization is brought for pools year of Lviv Region, in particular maximal values are got for range to Drohobych (2 times), and minimum - for range the Dniester is a village Zhuravno 1,2 times.

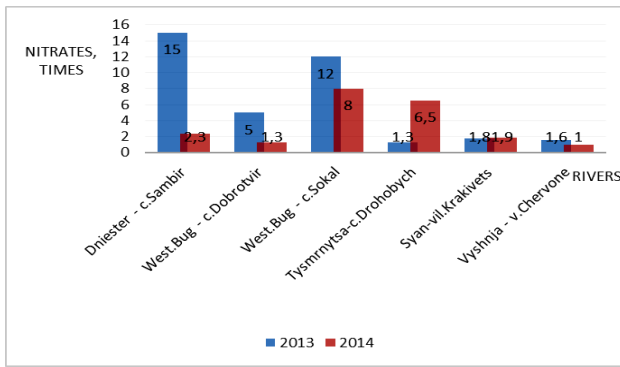


Fig. 3. Exceeding of content of nitrates for pools year of Lviv Region

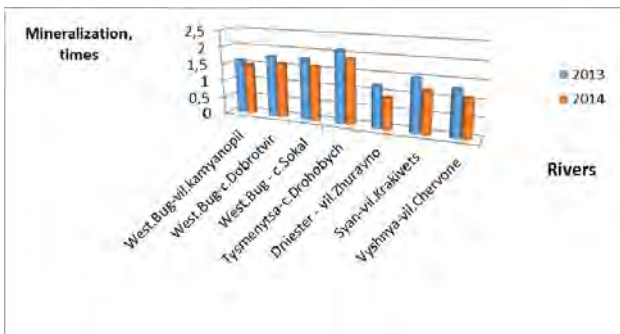


Fig. 4. Exceeding of level of mineralization for pools year of Lviv Region

	1	2	3	4
River Stryj- village Verhne Synyovydne		1,00	clean water	1,5
River West Bug- city Dobrotvier		2,41	weakly polluted water	1,2
River West Bug- city Sokal		2,26	weakly polluted water	1,2
River Sklo-village Krakivets		1,79	weakly polluted water	1,2
River Vyshnja- village Chervone		1,68	weakly polluted water	1,2

Conclusion

In 2014 water in most of the Western Bug basin alignment was characterized as "poorly muddy", in alignment - "The Western Bug - Kamyanka-Buzka" - as "mildly muddy", and in the Poltva - as "dirty". Downward on stream of the Western Bug tends to the improvement of quality of water.

Comparatively with the last year quality of water is in all rangs the Western Bug and in the Rati became worse, and in the Poltva - did not change substantially.

Comparatively with the last year quality of water became better in Stryvazh and on all alignments on the rivers the Dniester and the Stryi. Quality of water in the the Zubra River and of the Tysmenytsa River became worse.

Increase of mineralization of water in the rivers of the Tysmenytsa and the Stryi, in rangs "The Dniester – vil. Rozvadiv" and "The Dniester - it is predefined the of Zhuravno" by the different hydrological terms of the rivers during sampling.

Water in all alignments of pool of the Syan was "poorly muddy".

References

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TABLE 1
VALUATION OF THE QUALITY OF SURFACE WATERS LVIV REGION
ACCORDING TO CONTAMINATION FACTORS

Name opening	coefficient pollution	verbal characteristic of the coefficient pollution	CDA
1	2	3	4
River Dniester-city Sambir	1,02	weakly polluted water	1,2
River Dniester-city Rozvadiv	1,54	weakly polluted water	1,2
River Dniester-village Zhuravno	1,39	weakly polluted water	1,2
River Tysmenytsa-city Drohobych	3,59	moderate polluted water	0,9