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Legal frame of water protection in Slovakia

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ABSTRACT

It is necessary to invest the maximal effort for protection of all elements of environment including water for securing of quality living conditions for next generations. Each country creates its own legislative background that tries to regulate the actions, which cause or can cause an unmasked status in water quality and quantity. Except this it is necessary to monitor also the areas that can influence the water quality. The agriculture production belongs to these actions that really can pollute the water sources, especially when the farmers do not respect the specific rules in farming, mainly in the areas in so-called vulnerable zones. Therefore it was created the set of rules and principles that have their substance in laws and acts. The scope of these rules is gradually to reach the wanted status in water protection in two ways – form of controls and form of farmer education

Key words: water protection, water quality, vulnerable zone, farmer education

IZVLEČEK

ZAKONSKI OKVIRJI VARSTVA VODA NA SLOVAŠKEM

Da bi zagotovili kakovostne življenjske razmere za naslednje generacije, je potrebno vložiti maksimalne napore v varstvo vseh elementov okolja vključno z vodo. Vsaka dežela oblikuje lastne temelje zakonodaje, s katerimi poskuša usmerjati aktivnosti, ki vodijo k ustrezni kakovosti in količini voda. Poleg tega je potrebno spremljati površine, ki lahko vplivajo na kakovost voda. Kmetijstvo spada med dejavnosti, ki lahko onesnažijo vodne vire, posebno če se kmetovalci ne držijo ustreznih pravil kmetovanja, zlasti v območjih ranljivih con. Zato so bili sprejeta ustrezna pravila in principi, ki imajo svojo zakonsko podlago za ukrepe. Ta pravila so zastavljena s ciljem, da bi dosegli želeno raven v varstvu voda, in sicer na dva načina: v obliki kontrole in vzgoje kmetovalcev.

Ključne besede: varstvo voda, kakovost voda, ranljive cone, izobraževanje kmetovalcev

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1 INTRODUCTION

The water becomes one of the most strategic raw due to global climate change. Both the rapid increase of industry and intensity of agricultural production cause that water quality in some cases do not respond our request. As most living organism in the world is depended on the water, the problem of water protection should be on the prominent places in all advanced societies. It is known two main effects of water pollution – from natural sources due to geological and geochemical anomalies (e.g. increased contents of heavy metals in the soils) and from “human” sources (e.g. from industry or agriculture). In the first mentioned case it is not possible to reduce the influence of pollution or it is economic too expensive. The second mentioned pollution is to regulate, especially with legislative measures and thereby it is possible to reduce the rate of water contamination. In the frame of European community were created many directives and acts that are oriented to water protection. All membership countries had to implement the separate directives to the national legislation. Slovakia is also obligatory to keep the specific principles in water protection.

2 METHOD

For need of this paper were taken into account the following documents: Law of water (No. 364/2004), Nitrate directive (public notice No. 392/2004), Act of Slovak government No. 617/2004 that define the vulnerable zones, Law of fertilisers (No. 136/2000), its amendment No. 555/2004 and Act of Slovak government No. 389/2005 about good agricultural praxis.

3 RESULTS

The water law (No. 364/2004) is taken as the background for water protection. This law creates the conditions for universal water protection including water eco-systems, takes care about conservation and/or improving water status and its effective, economical and sustainable using. Except these, the law regulates the rights and duties of subjects to the water and authorize the states organs to penalty for breaking the duties.

Everybody, who executes the activity, which can influence the status of both groundwater and surface water, is obligatory to invest the necessary effort to their conservation and protection. The whole problem of water protection concerns of following areas:

- areas with surface water that is dedicated for drinking water,
- areas with water suitable for bath,
- areas with surface water suitable for life and reproduction of original fish varieties,
- protected water areas,
- protective zones of water sources,
- sensitive areas,
- vulnerable zones,
- protective areas and their protective zones.

The area, that with its own natural conditions creates the meaningful natural water accumulation, is declared as **protected water area**. In this area it is possible to

execute the activities, only when the all-round protection of both groundwater and surface water is secured.

In protected water area is forbidden:

- a) to apply the fertilizer and pesticides by plane in neighbourhood surface water and uncovered groundwater sources,
- b) to reclaim forest plots
- c) to reclaim agricultural plots, which are larger than 50 ha
- d) to build dumps for risky waste.
- e) to build or enlarge:
 - industry sources, in which are produced or used the risky materials
 - equipments for transport of risky materials (e.g. oil ducts),
 - veterinary sanitation equipments,
 - high density animal farms,
 - holiday equipments without securing of waste water cleaning.

In the case of shepherd it is necessary to take care of water erosion and of surface water protection in the protected water area.

Protective zones of water sources are divided onto three levels. On the area of first level it is forbidden any agricultural activity. Protective zone of second level is using for water source protection from outlying places and if it is necessary, it is declared also protective area of third level.

Sensitive areas are water formation of surface water, in which come or can come to the pollution due to higher nutrient or other risk elements concentration.

Vulnerable zones are agricultural used areas, from which the water flows to the surface water or infiltrates to the groundwater and at the same time the nitrate concentrate in these water sources is more than 50 mg.l^{-1} or can reach this value in short time. The *Program of agricultural activities* was created from the point of view of advanced water protection in these areas. This *Program* (Nitrate directive) is revalued each four years.

The agriculture is really one of the most important sources of water pollution. It results from the substance of agricultural production, which can pollute both groundwater and surface water by using risky materials. The high concentration of animal production, as well as the storage of farming fertilizers, waste and pesticides can be the risk also for pointed water sources pollution. The water law solves also this problem.

In Slovakia occurs 1.521 mil. hectares of agricultural soils, which are declared as vulnerable zones. It is about 60 % of all area of agricultural soils in Slovakia (Figure). The agricultural soils in these zones is integrated in register of productive blocks in framework of Land Parcel Identified System (LPIS) into three groups with various intensity of nitrogen fertilization reduction. The low, middle and high level of nitrogen fertilization reduction is defined according to status of water quality jeopardy with nitrates, soil characteristics, importance of water sources and rock background. The principles of farming in vulnerable zones are summarised in Nitrate directive that

determines the *Program of agricultural activities*. Individual farming conditions are as follows:

- the agricultural plots with slope more than 10° do not have to be used as arable land
- on the plots with the slope more than 7° it is necessary to make measures against water erosion
- drained areas are classified as areas with high level of nitrogen fertilization reduction
- the fertilization with nitrogen is forbidden:
 - from November 15th to February 15th
 - if the soil is frozen more than 8 cm or is covered with snow more than 5 cm
 - if the soil is sloppy
 - on the agricultural plots that are each year endangered with flood
 - in areas:
 - a) 10 m from surface water source
 - b) 10 m from the border of protected zones of first level of groundwater source
 - in the plots with the slope more than 10°
 - to stock of manure: on the plots with the slope more than 3°.

Program of agricultural activities determines also the ways of nitrogen fertilizers application as follows:

- the maximal amount of nitrogen fertilizers on the plots of grassland with the slope more than 7° is 80 kg N.ha⁻¹.year⁻¹,
- the nitrogen fertilizers on the plots with the slope more than 7° is necessary to plough till 24 hours,
- the maximal amount of nitrogen fertilizers to the crops for green fertilization is 30 kg N.ha⁻¹,
- the maximal amount of nitrogen in farm fertilizers is 170 kg.ha⁻¹.year⁻¹,
- additional amount of nitrogen can be used only during vegetation period and its level is determined by level of reducing of nitrogen fertilization:
 - 50 kg N – in the case of low reducing
 - 40 kg N – in the case of middle reducing
 - 30 kg N – in the case of high reducing
- the nitrogen in mineral fertilizers, sludge and sediments can be used in following maximal amounts:
 - 170 kg N.ha⁻¹ – in the case of low reducing
 - 150 kg N.ha⁻¹ – in the case of middle reducing
 - 120 kg N.ha⁻¹ – in the case of high reducing
 - nitrogen in mineral fertilizers can be used in partial rations single-shot ration does not exceed 60 kg N.ha⁻¹.

The requirements for working-out of *Code of good agricultural praxis* are the part of this law. The Code has to include the following measures:

1. the period, when the fertilizers application is not suitable,
2. the way of fertilizers application on the plots with great slope,
3. the way of fertilizers application on the frozen plots and/or plots covered by snow,
4. the conditions for fertilizers application on the plots near the water flows,
5. the capacity and construction of storage tanks for organic fertilizers,

6. the process for mineral and organic fertilizers on the plots include the amount their application, which will keep the nutrient transport from the soil into the water on acceptable level.

These measures are detailed elaborated in Law of fertilisers and in Act of Slovak government about good agricultural praxis. The main principles concerning water protection in conditions of fertilizers using are:

- solid farming fertilizers have to be ploughed till 48 hours and liquid farming fertilizers till 24 hours after application
- the yearly maximal amount of nitrogen in farm fertilizers is $170 \text{ kg}\cdot\text{ha}^{-1}$ and the single-shot ration of liquid fertilizers does not exceed $50 \text{ m}^3\cdot\text{ha}^{-1}$,
- the fertilizers application on agricultural soils is reduced from November 15th to January 31st,
- the fertilizers with nitrogen do not be applied on the:
 - a) plots with slope more than 12° and if it exists the risk of their washing up to the surface water sources,
 - b) sloppy plots,
 - c) drained plots till 2 months after drainage and liquid fertilizers till 2 years,
 - d) plots in neighbourhood with water sources – it has to be created the 10 m wide zone at surface water sources and 50 m at groundwater sources.
 - e) plots in protective zones of water sources,
 - f) plots frozen more than 8 cm or is covered with snow more than 5 cm
 - g) plots if the way of fertilizers application can endanger the environment

To determine the fertilizers amount it is necessary to go out from:

- a) crop requirement for supposed yield and its quality,
- b) the amount of available nutrients in the soil and from nutrients balance in the soil
- c) soil reaction (pH value), relationship of important cations (calcium, magnesium and potassium) and from soil organic matter balance in the soil,
- d) farming conditions that influence the availability of nutrients (e.g. forecrop, tillage, irrigation, etc.).

To the Code of good agricultural praxis can be included also following measures:

1. farming on the plots including crop rotation, the ratio between plots reserved for permanent crops and annual crops,
2. keeping at least minimal vegetation on the plots, especially during rainy periods, when nitrates are leaching to the groundwater,
3. working-out of fertilization plans for individual farmers including records about fertilizers using,
4. water protection before pollution from the surface drain and irrigation water leaching.

The organs of statement inspect over obligation of water protection. To these organs belong:

- 1.) Ministry of environment
- 2.) Regional offices of environment
- 3.) District offices of environment
- 4.) Slovak inspection of environment
- 5.) Community

- 6.) Ministry of agriculture – besides other it determines the water for irrigation and watches about its quality, publishes the Code of good agricultural praxis, publishes and checks Program of agricultural activities in vulnerable zones.

4 CONCLUSION

The problem of water protection is much more wider than is written in this paper. Legal frame of water protection does not consist only from mentioned laws and acts, but it is inserted in many other laws concerning other components of environment. Even if the environment protection is definite determined in laws, the practical protection lies on the shoulder of society and individual human.

5 REFERENCES

Act of Slovak government No. 617/2004

Act of Slovak government No. 389/2005

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Law of water (No. 364/2004)

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Figure: The vulnerable zones in Slovakia

