

Rekreace a ochrana přírody – s rozumem ruku v ruce?

Křtiny 11. - 13. 5. 2020

Agri-environmental schemes and their contribution to protection of selected environmental components in agricultural landscape

Agro-environmentálne schémy a ich príspevok k ochrane vybraných zložiek životného prostredia v poľnohospodárskej krajine

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Introduction

Agri-environmental schemes (AES) belong to the most important EU policy instruments in motivating farmers to improve environmental conditions in rural Areas and represent important part of Rural Development Programs (RDP).

From an agricultural perspective, the protection is linked to the implementation of agricultural production practices that contribute to the preservation of natural resources and improvement of the environment and landscape.

The basic requirement is a commitment to use environmentally friendly farming practices which are beyond the commonly used farming practices.

At present, agri-environmental schemes are mainly based on compensation for costs and loss of profit resulting from alteration of alteration of farm practices.

Agro-environmentálne schémy sú významným nástrojom Spoločnej poľnohospodárskej politiky EÚ pri ochrane a zlepšovaní stavu zložiek životného prostredia. Podporované sú opatrenia, ktoré sú nad rámec požiadaviek krížového plnenia a národnej legislatívy a to predovšetkým formou kompenzáciou vynaložených nákladov resp. strát zisku v dôsledku obmedzenia hospodárenia.

Quantitative valuation of agri-environmental schemes

Quantitative valuation of agri-environmental schemes was executed for RDP SR 2007-2013 and in RDP SR 2014-2020, where so far their ongoing monitoring has been carried out.

The structure of the individual measures for the purpose of alignment of the two periods illustrates Table 1.

Mentioned measures were sub-divided to three groups:

- environmentally friendly procedures,
- soil conservation measures, and
- biodiversity conservation.

Kvantitatívne hodnotenie agro-environmentálnych schém bolo vykonané pre PRV SR 2007-2013 a PRV SR 2014-2020. Príslušné opatrenia, zoskupené do trochu skupín, ilustruje Tab. 1.

Tab 1. Selected measures, sub-measures or operations of AES within 2007-2013 and 2014-2020

2007 - 2013	2014 - 2020 (2017)
Environmentally friendly procedures	
Basic support – arable land (80 482 ha)	x
Basic support–permanent grasslands (26 363 ha)	x
	Agri-environmental and climatic measure
Integrated production – total (12 338 ha)	<i>Integrated production – total (17 608 ha)</i>
Integrated production in vineyards	<i>= Integrated production in vineyards</i>
Integrated production in orchards	<i>= Integrated production in orchards</i>
Integrated production in vegetable production	<i>= Integrated production in vegetable production</i>
x	<i>= Protection of water resources – water protected area Rye Island (Žitný ostrov) (9 247 ha)</i>
Ecological agriculture (148 988 ha)	Ecological agriculture (165 950 ha)
Soil conservation measures	
Protection against soil erosion on arable land (4 319 ha)	Agri-environmental and climatic measure
<i>= Stabilizing crop rotation</i>	x
<i>= Bio-belts</i>	<i>= Multifunctional field margins/bio-belts on arable Land (26 ha)</i>
Protection against soil erosion in vineyards	x
Protection against soil erosion in orchards	x
Grassing of arable land (4 139 ha)	x
Biodiversity conservation	
Protection of habitats of semi-natural and natural grasslands (69 553 ha)	Protection of habitats of semi-natural and natural grasslands (134 806 ha)
Protection of habitats of selected bird species (42 437 ha)	Protection of habitats of selected bird species (area not available)
	Agri-environmental and climatic measure
	<i>= Protection of Great Bustard habitats (1 787 ha)</i>
	<i>= Protection of Ground Squirrel (410 ha)</i>

Environmentally friendly practices

The highest representation in this category had “Ecological agriculture” area of which shows an increasing trend.

Integrated production was/is around 10 times lower, but as in the case of ecological agriculture an increase in area was found (see Tab. 1).

In period 2007-2013, nearly 107 000 ha, was recorded at measure “Basic support” focused to arable land and permanent grasslands, but for period 2014-2020 was not designed and supported.

Of particular importance in the period 2014-20 is the measure “Water resources protection – water protected area (w.p.a.) Rye Island”. Interim monitoring shows that from assumed capacity (70 000 ha) only on just over 9 000 ha was implemented to 2017.

Iba ekologické poľnohospodárstvo a integrovaná produkcia sa vyskytovali v oboch programovacích obdobiach. Plocha oboch opatrení má rastúci charakter. Základná podpora v období 2014-2020 nepokračuje. Opatrenie na ochranu vôd Žitného ostrova je síce významné, ale záujem poľnohospodárov o toto opatrenie bol do roku 2017 relatívne nízky.

Soil protection measures

Due to differences, measures of both programming periods could not be compared.

In period 2007-13, the area under the soil conservation measures set at 154 000 ha of agricultural land was not reached. In the sub-measure “Grassing of arable land” and “Protection against erosion in vineyards and orchards” was recorded the largest deficits.

Biodiversity protection

The area of these measures was/is primarily determined by suggestions of the State Nature Conservancy of the Slovak Republic.

"Protection of habitats of semi-natural and natural grasslands" is of principal interest. In 2017, area of this measure almost doubled in comparison to the previous period.

Pôdo-ochranné opatrenia v oboch programovacích obdobiach nie sú porovnateľné. V prípade ochrany biodiverzity dominuje opatrenie „Ochrana biotopov polo-prírodných a prírodných trávnych porastov“, ktorého výmera v porovnaní s predchádzajúcim obdobím sa takmer zdvojnásobila.

Qualitative valuation of agri-environmental schemes

The qualitative estimation of the environmental effects was evaluated through revised approach which consisted in updating of the assessed measures (soil protection measures and environmentally friendly procedures of both programming periods were taken into account), in the use of 5-grade classification and focusing on the environmental effects of such measures in relation to soil and water.

In the case of soil and water, the emphasis was on improving them and not just maintaining them.

The requirements for specific measures within AES, described in RDP SR for both programming periods, were linked to environmental issues (see Table 2).

Existujúci systém hodnotenia environmentálnych efektov bol prehodnotený. V prípade pôdy a vody dôraz bol kladený na zlepšenie ich stavu a nie len na jeho udržanie. Požiadavky na opatrenia príslušných opatrení PRV boli prepojené na zložky životného prostredia.

Tab. 2 Linking of requirements for specific measures within AES related measures to soil and water quality protection

Type of measure	What issue is primarily addressed
Basic support for arable land (only in 2007-2013)	soil pollution by pesticides (partly), water pollution by nitrogen (partly)
Basic support for permanent grasslands (only in 2007-2013)	water pollution by nitrogen (partly)
Integrated production in vineyards	soil erosion, ground and surface water pollution by nutrients
Integrated production in orchards	soil contamination by pesticides, water pollution by pesticides and partly by nutrients (N)
Integrated production in vegetable production	soil contamination by pesticides, ground water pollution by pesticides and nutrients (especially N)
Protection of water resources – water protected area (w.p.a.) Rye Island (Žitný ostrov)	ground water pollution by nutrients (especially N)
Ecological agriculture	soil contamination by pesticides, water pollution by pesticides and nutrients
Protection against soil erosion on arable land	soil erosion, surface water pollution by nutrients
Protection against soil erosion in vineyards	soil erosion, surface water pollution by nutrients
Grassing of arable land	SOM increase, ground & surface water pollution, soil erosion (dependence on the slope)
Protection of habitats of semi-natural and natural grasslands	biodiversity conservation, water pollution by nitrogen (partly)

Tables 3 and 4 show the ranking of effectiveness of individual measures within agri-environmental schemes in terms of protecting of soil and aquatic environment.

The greatest environmental effect is expected at the change of arable land to permanent grassland. This directly corresponds with measure “Grassing of arable land”, which (in period 2007-2013) amounted to 4 319 ha and in period 2014-2020 no longer continues.

„Ecological agriculture”, due exclusion of the use of fertilisers and pesticides has also significant environmental effect.

Environmental effect of “Integrated production” is lower.

Hodnotenie efektívnosti jednotlivých opatrení z pohľadu ochrany pôdy a vôd je uvedené v tab. 3 a 4. Najväčší environmentálny efekt sa dosahoval pri zatrávňovaní ornej pôdy. Toto opatrenie v súčasnom období už nepokračuje. Významný ekologický efekt z pohľadu pôdy a vody má aj ekologické poľnohospodárstvo.

Tab. 3 Estimated effectiveness of individual measures within agri-environmental schemes in terms of soil protection

Measure	Partial environmental effect			Average effect
	SOM content improvement	Decrease of soil loss by w. erosion	Decrease of pollution by pesticides	
Environmentally friendly procedures				
Integrated production in vineyards	3	3	3	3.00
Integrated production in orchards	1	2	3	2.00
Integrated production in vegetable production	1	1	3	1.67
Ecological agriculture				
<i>on arable land</i>	2	2	5	3.00
<i>in orchards</i>	2	2	5	3.00
<i>in vineyards</i>	2	2	5	3.00
<i>on permanent grasslands</i>	3*	x**	3***	3.00
Protection of water resources – w.p.a. Žitný ostrov	1	x	1	1.00
Soil protection measures				
Protection against soil erosion on arable land				
<i>Stabilizing crop rotation</i>	2	3	1	2.00
<i>Bio-belts</i>	2	3	1	2.00
<i>Multifunctional field margins/bio-belts on arable l.</i>	1	3	1	1.67
Protection against soil erosion in vineyards	3	3	1	2.33
Protection against soil erosion in orchards	3	3	1	2.33
Grassing of arable land	5	5	5	5.00
Biodiversity conservation				
Protection of habitats of semi-natural & natural grasslands	3*	x**	2***	2.50

* Capacity of this measure is considered as medium because the highest environmental effect is achieved after shifting of arable land to permanent grasslands.

** Irrelevant in the case of permanent grasslands (which generally can-not be changed to arable land) where soil erosion is practically zero and insignificant in lowland conditions of water protected area “Žitný ostrov”.

*** Capacity of this measure is considered less than medium because on permanent grasslands are not intensively treated by pesticides (as in the case of arable land).

Tab. 4 Estimated effectiveness of individual measures within agri-environmental schemes in terms of water quality protection

Measure	Partial environmental effect			Average effect
	Decrease of pollution by pesticides	Decrease of pollution by nitrogen	Decrease of pollution by phosphorus	
Environmentally friendly procedures				
Integrated production in vineyards	3	3	2	2.67
Integrated production in orchards	3	3	2	2.67
Integrated production in vegetable production	3	3	3	3.00
Ecological agriculture				
<i>on arable land</i>	5	4	3	4.00
<i>in orchards</i>	5	4	3	4.00
<i>in vineyards</i>	5	4	3	4.00
<i>on permanent grasslands</i>	2*	4	2**	2.67
Protection of water resources - w.p.a. Žitný ostrov	1	3	2	2.00
Soil conservation measures				
Protection against soil erosion on arable land				
<i>Stabilizing crop rotation</i>	2	2	3	2.33
<i>Bio-belts</i>	2	2	4	2.67
<i>Multifunctional field margins/bio-belts on arable l.</i>	2	2	3	2.33
Protection against soil erosion in vineyards	2	3	3	2.67
Protection against soil erosion in orchards	2	3	3	2.67
Grassing of arable land	4	4	5	4.33
Biodiversity conservation				
Protection of habitats of semi-natural & natural grasslands	x	3***	2	2.50

* Capacity of this measure is considered less than medium because on permanent grasslands are not intensively treated by pesticides (as in the case of arable land).

** Capacity of this measure is considered only as medium because permanent grasslands (as such) are not the treated with high P rates and available P supply is usually lower than in the arable land.

*** Capacity of this measure is considered as medium because permanent grasslands are not intensively treated by nitrogen.

Although areal extent of measure “Protection of habitats of semi-natural and natural grasslands” within biodiversity protection block is the second largest after organic farming, its environmental effect is primarily focused to biodiversity issue. So, its impact on water protection is smaller, what can be justified by the relatively low intensity of permanent grassland use in Slovakia in the periods under review.

The measure “Basic support” was not included in the environmental efficiency assessment, because its effect (see Table 2) consisted in slight restrictions, namely exclusion of use of some predefined pesticides, restriction of average fertiliser N-rate on arable land to 120 kg/ha per year, exclusion of use of mineral fertilisers on permanent grasslands.

Hoci opatrenie „Ochrana polo-prírodných a prírodných biotopov trávnych porastov“ je rozsahom druhé v poradí (za ekologickým poľnohospodárstvom), jeho vplyv na vodu je nižší. Pri pôde sa nepredpokladá, že by došlo k jej intenzívnemu využívaniu resp. rozoraniu. Opatrenie „Základná podpora“ nebolo hodnotené, pretože obmedzenia hospodárenia boli pomerne malé.

To conclude...

It can be expected that the effect of some agri-environmental measures does not necessarily correspond with the increase in their range (areas) indicated in quantitative evaluation.

At setting of measures within AES, as indicate recent findings, attention is necessary focus more on achieving results (environmental effects) than on compliance and compensation for the loss of revenue from reduced production or additional costs beyond cross-compliance and national legislation.

Due to voluntary nature of AES, measures do not have to be implemented where it has the greatest environmental effect, what is relevant especially for soil and water issues.

Ako vyplýva z nedávnych zistení, pozornosť sa začína viac zameriavať na dosahovanie výsledkov (účinky na životné prostredie) ako na dodržiavanie predpisov resp. požiadaviek opatrení. Dobrovoľný charakter opatrení PRV resp. AES nezaručuje ich efektívnu alokáciu tam, kde prinesú najväčší environmentálny efekt.

A wide-angle photograph of a lush green wheat field. The foreground is filled with numerous white daisies with yellow centers, growing among the wheat stalks. The wheat field extends to a flat horizon line under a clear blue sky with a few wispy white clouds. In the distance, a line of trees and utility poles is visible against the horizon.

Thank you for attention!