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Potential sources of measures financing for reproduction of soil fertility

Scientific problem. In Ukraine, unfortunately, system of funding measures for protection and rational use of land and improving soil fertility is still imperfect. Funding from the state budget, if it is carried out, is not systematically, through various sources, preferably as a residual principle. Moreover, sometimes minor costs are sent to resolve other issues. For example, at liming acid soils of Forest-Steppe where it is sufficient to limit measures on phytomelioration, on green manuring, which must be implemented at the expense of land users, on reclamation – according funded enterprises. Along from local budgets appropriate measures usually are not financed [1]. It is estimated that

more than 500 million tons of soil are eroded annually from arable land in Ukraine resulting in loss of soil fertility across 32.5 million hectares and equivalent to around 5 bln USD in nutrient equivalent [2]. Expert assessment of economic losses (data of 2013) from spreading soil degradation in Ukraine approximately on area of 10 million hectares has showed, that the total economic loss (loss of income (revenue) from sales) due to harvest shortfall is 14 bln UAH, the total amount of lost profits due to shortage of harvest (in actual profitability in 2013) is 1.4 bln UAH or 15.5 % of the profits from sales of crop agriculture in 2013 [3].

Analysis of recent researches and publications. The work by O. A. Korchynska substantiates the necessity of forming «soil fertility conservation fund» at the macro and micro level (as

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a component of first cost of production) and «fund raising soil fertility» on the micro level (mainly from the profits of enterprises) [4, p. 9]. In their work I. H. Topikha and O. A. Mamalyuk identified sources of financing measures of sustainable land use and agricultural land protection depending on soil-protective measures undertaken for the purpose and extent of impact [5]. In article A. K. Igembayeva, N. V. Jangarasheva, K. T. Abaeva there are considered approaches to the classification of economic methods of management of land resources reproduction, based on what methodological apparatus of economic support of land resources reproduction is improved [6]. In European countries, soil-protective initiatives are summarized in the document «European soil policy», which has advisory status, but it has received considerable attention and has been used in many countries [7].

Scientists proved the necessity of rapid adoption of the National programme for the Protection of soils as the basis of management of all activities aimed at protecting and enhancing soil fertility as it is incorrect to hope the implementation of certain and unsystematic measures will change the situation [8, p. 15]. System solution of this problem requires finding potential funding sources of soil-protective measures. Obviously, for the reproduction of soil fertility it is necessary to involve costs of land users, because even in such a rich country like the USA directly land users spend a lot of costs on the reproduction of soil fertility [8, p. 16]. However, in the current economic environment conditions of too high prices for agricultural chemicals and ameliorants without state financial support it is very difficult to achieve even simple reproduction of soil fertility.

The objective of the article – to highlight the results of research on the study of potential sources of funding for reproduction of soil fertility.

Statement of the main results of the study. The research identified strategic priorities to ensure economic reproduction of soil fertility, humus suspension and achieving its balance in the soil; enrich soil with nutrients; protecting soil from erosion; reclamation of acid and solonchic soils [9]. Dedicated priorities are included in the draft of National programme for the Protection of soils in Ukraine, the projected

total amount of funding (without the cost of fertilizer) on the 2016–2025 – 16.3 bln UAH (average – 1.63 bln) including the funds: state and local budgets – 8.05 bln (average – 805.0 million); by landowners and land users – 8.25 bln (average – 824.6 million UAH).

Financing of activities to solve the challenge of sustainable use and reproduction of soil is proposed to perform by the state and local budgets, innovation and investment funds, including international entities and other sources provided by law. Taking into account the limited financial resources in the state, during determining the amount of funds for the implementation of the proposed measures and their distribution we should be guided by criteria to maximize environmental impact.

Potential sources of measures financing for reproduction of soil fertility in agriculture of Ukraine are substantiated by the following options:

Variant 1 – based on targeting of financing (30 %) from the single tax which was introduced from 01.01.2015 instead of fixed agricultural tax on soil-protective measures.

In view of average in Ukraine normative monetary assessment of 1 ha of arable land as of 01.01.2015 at 25773 UAH for rate 0.45 %, the amount of single tax will equal to 115.98 UAH/ha against 5.60 UAH by normative monetary assessment of one hectare of arable land held as of July 1, 1995 – 3734 UAH. In view of FAT actual revenues to the budget in 2012 at 131 million UAH, estimated revenues from the single tax will be 2713 million UAH, ie additionally it will be generated about 2582 million UAH.

In the case of channeling funds in the amount of 813.9 million UAH per year for the 2016–2025 on the implementation of the priority measures for the reproduction of soil fertility in agriculture of Ukraine it could be financed 101.1 % of the average annual needs of budget funds for the implementation of National programme of soil protection in Ukraine.

Variant 2 – provides the introduction of fee on protection of soil in order to create the State Fund for the conservation of soil and fertility reproduction. For this aim it is proposed to supplement the draft Law of Ukraine «On the use of agricultural lands» with position on the

amendments to the Tax Code as follows: «Fee on soil protection is a local fee, the costs of which are referred to the local budget and used for the intended purpose for the needs of conservation and reproduction of soil fertility. Fee payers are owners, land users and tenants of agricultural land, which are leading agricultural production and farm at the location land. The tax base is the normative monetary assessment of agricultural land on the basis of indexation factor determined in accordance with the procedure established by Chapter XIII of the Tax Code of Ukraine. The rate of the fee for one hectare of agricultural land is 0.5 % of the normative monetary assessment».

In view of average in Ukraine normative monetary assessment of 1 ha of arable land as of 01.01.2015 at 25773 UAH, the fee for the protection of soil will equal to 128.87 UAH/ha. Given the actual area of farm arable lands 19203.6 thousand hectares estimated revenues from tax input on soil protection will be 2474.8 million UAH, that is it will be generated about 2.5 bln UAH.

In the case of funds targeting 32.5 % from revenues, ie the amount of 805 million UAH per year for the 2016–2025 on the implementation of measures on reproduction of soil fertility in Ukraine it can be satisfied the need of budget funds for the National programme of soil protection of Ukraine. However, in the case of this variant implementation the state can fully (not including mineral fertilizers) finance measures on reproduction of soil fertility in agriculture of Ukraine, making this every year for the 2016–2025 about 65.8 % of revenue, the rest of the money can be directed to formation of the insurance reserve fund of soil conservation and fertility reproduction.

Variant 3 – based on targeting of funds (30 %) from the land tax, provided the increase of its stake in one hectare of arable land to 1 % of its normative monetary assessment, that is provided by the Draft Law of Ukraine «On circulation of agricultural land» and it is offered in the Tax Code of Ukraine p. 272.1 art. 272 read as follows: «Tax rates per hectare of farmland are set in percentage of their normative monetary assessment in the following sizes: for arable land – 1,0; for hayfields and pastures – 0,1; for perennial plantations – 0.03».

Given the average in Ukraine normative monetary assessment of 1 ha of arable land of 01.01.2015 at 25773 UAH, the amount of land tax will be equal to 257.73 UAH/ha against 25.77 UAH rate by 0.1 %. Given the actual land tax revenues to the budget in 2012 at the level of 3614.4 million UAH, the approximate area of arable land, which may be subject to tax at the level of 9.1 million hectares, an indicative amount of the tax revenue from agricultural landowners and land users in the case of changes, will be 2345 million USD, ie additionally it will be generated about 2111 million UAH.

By directing 30 % of the total land tax revenue, ie the amount of 703.5 million UAH per year for the 2016–2025 on the implementation of measures to reproduction of soil fertility, we can on 87.4 % satisfy the need of budget funds for the National programme of soil protection of Ukraine. However, in the case of this variant implementation the state can fully (not including fertilizers) finance measures to reproduction of soil fertility in agriculture of Ukraine, making this every year for the 2016–2025 77.2 % of additional revenue of land tax.

Variant 4 – combined, as based on the simultaneous implementation of the first and third variants that are logically complement each other. In this case, the estimated amount of additional revenue will be 1517.4 million UAH, accounting for 93.1 % of the total (not including fertilizers) annual requirement for the programme. Obviously, in the case of this variant implementation, the state will need to fully fund the budget funds for measures on reproduction of soil fertility in agriculture of Ukraine, making this every year for the 2016–2025 53.1 % of additional income of single and land tax.

Variant 5 – combined, as based on the simultaneous implementation of the first and second variants, which do not contradict each other. In this case, the estimated amount of additional income will be 3288.7 million UAH. Obviously, in the case of this variant implementation the state can fully (not including fertilizers) finance the measures on the reproduction of soil fertility in agriculture of Ukraine, aiming at it every year for the 2016–2025

49.6 % of additional income of single tax and tax on soil protection.

Variante 6 – combined, as based on the simultaneous implementation of the second and third variants, which do not contradict each other. In this case, the estimated amount of additional income will be 3178.3 million UAH. It is clear that, in the case of this variant implementation the state, again, will completely (not including fertilizers) finance measures on reproduction of soil fertility in agriculture of Ukraine, making this every year for the 2016–2025 51.3 % of additional revenue duty on soil protection and land tax.

Variante 7 – combined, as based on the simultaneous implementation of the first, second

and third variants, which do not contradict each other. In this embodiment, the approximate amount of additional income will be 3992.2 million UAH. It is clear that in the case of this option the state can fully (not including fertilizers) finance the measures on the reproduction of soil fertility in agriculture of Ukraine, making this every year for the 2016–2025 40.8 % of additional income of single tax collection for the protection of soil and land tax.

Thus, in the result of a study there were substantiated the potential sources of funding for various soil protective measures with different variants (Table. 1).

Table 1. Potential sources of funding soil protective measures envisaged by the National programme of soil protection of Ukraine

№	Variants of potential funding sources	Indicators			
		The estimated annual revenues, million UAH	The average annual budget requirement for the Programme, million UAH	The level of the possible financing of the budget of the Programme, %	Specific weight funds to be directed to finance Programs through budget, %
1	Targeting of part of the funds (30%) of the single tax that is instead FAT	813.9	805.0	101.5	98.9
2	Introduction duty on soil protection in the amount of 0.5% from the normative monetary assessment of agricultural land	2474.8	805.0	307.4	32.5
3	Targeting of part of the funds (30%) from the land tax, provided the increase of its stake to 1% of normative monetary assessment of arable land	703.5	805.0	87.4	100.0
4	Concomitant use of variants № 1 and 3	1517.4	805.0	188.5	53.1
5	Concomitant use of variants № 1 and 2	3288.7	805.0	408.5	24.5
6	Concomitant use of variants № 2 and 3	3178.3	805.0	394.8	25.3
7	Concomitant use of variants № 1, 2 and 3	3992.2	805.0	495.9	20.2

Source: author's calculations.

Additional potential sources of funding of priorities soil protective measures in agriculture of Ukraine could be:

1. Fines for violation of the law and land protective funds received as compensation for losses of agricultural and forestry production.

2. Fines for the use of agricultural land for agricultural commodity production with total area of over 100 hectares, not developed, agreed and approved in the prescribed manner of land management projects that provide ecological and economic assessment of crop rotation and streamline land and provide measures to protect the lands.

3. Fines for non-compliance standards of optimum ratio crops in crop rotation and crop pattern norms approved by the Cabinet of Minis-

ters of Ukraine of 11.02.2010 № 164 «On approval of standards optimum ratio crops in crop rotations in different natural and agricultural regions».

4. Funds of international currency investments of the World Bank, the International Monetary Fund, European Bank for Reconstruction and Development and other international financial organizations; funds of private equity funds, international grants; funds allocated under the sector budget support from the European Union and international technical assistance; other sources not prohibited by law.

In this context it should be noted that the potential costs under the EU program to protect soil are estimated about 290 million euros in the first five years and 240 million euros a year

– over the next twenty years. After this period, it is expected that the estimated cost of the program will be reduced by about 2 million euros a year to the extent that as the respective shares in national budgets will grow [10].

In European countries financing of soil-protective activities is carried out under the EU Common Agricultural Policy and it includes two types: the first type within the direct payments to farmers (subsidies) are carried out 100% from the EU budget in exchange for compliance with environmental protection standards; in the second type the financing is carried out by sharing subsidies from the EU budget and country-member. Among the priorities of the EU Common Agricultural Policy for 2014–2020 the strategic one is economic method of stimulating ecologisation using scheme of environmentally friendly payments relating to soil protection. It will be directed

30 % of the national annual budget of direct payments since 2015 [11].

Conclusions. There are grounded potential sources of soil protective measures funding by various variants: channeling of funds (30 %) of the single tax replaces FAT; entry fee at protecting soil in the amount of 0.5 % of the normative monetary value of agricultural lands; channeling of funds (30 %) of the land tax, provided the increase of its stake to 1 % of normative monetary assessment of arable land; the simultaneous use of several ones of these options. Depending on variant of the budget funding of measures on reproduction of soil fertility in agriculture which will be selected, it will be formed appropriate relationship between different sources of funding priorities soil protective measures. Together with this proposed options allow you to generate sufficient annual amount of funds for the implementation of priority measures on the reproduction of soil fertility.

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