



Policy Brief

Inclusion of GAP measures in the subsidy programme

ECOserve Environmental Programme

**Aydin Inciyev, Samir Abbasov, Joachim Lenz,
Stephan Kroel
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1. Context

In Azerbaijan, the Strategic Roadmap for the Production and Processing of Agricultural Products (Roadmap) strives to increase the domestic agricultural production. The main goal of the Strategy is to achieve high competitiveness and sustainable development of agriculture sector including the reduction of agricultural imports and improvement of the national food security and sovereignty. Sustainable approaches in the agricultural sector are required to ensure long-term productivity gains, while minimizing the negative impact of agriculture on the environment. Environmental-friendly measures, which aim to balance the economic, social, and environmental value of natural resources are essential for a sustainable development in agriculture.

The programme “Management of natural resources and safeguarding of ecosystem services for sustainable rural development in the South Caucasus” (ECOserve)¹, implemented by GIZ, focuses on sustainable use of agricultural lands. Together with its national partner the Ministry of Agriculture, ECOserve implemented, tested, and evaluated Good Agricultural Practices (GAP).

2. Introduction

Being one of the most significant elements of an ecosystem, soil contains both biotic and abiotic factors. Soils have storage functions, e.g. for carbon dioxide and can convert organic material into nutrients only with the addition of water, oxygen, and soil organisms, thereby helping to regulate the circulation of substances and protect and restore groundwater. Soil is a non-renewable and non-reproductive source - it can take centuries and even millennia for new soil to form. Agricultural productivity is inevitably declining, and in some cases the destruction of ecosystems is irreversible. This undermines both food security and economic development and has a direct impact on rising hunger and poverty. Climate change is having a severe negative impact on various sectors, as well as creating challenges for agricultural development. The negative effects of climate change in Azerbaijan, which has limited land and water resources, have become clear in recent years. Against the background of population growth, the pressure on the use of available resources is growing. Sustainable and efficient use of natural resources, especially land and water resources, is one of the main directions of state policy. To this end, Azerbaijan joins the international challenges and attaches special importance to the criteria of sustainable development by means of legislation improvement and development of action plans in the field of public policy.

3. Observed problems

In order to increase the production of agricultural products in the last decade, the area of arable land has increased, which in turn increases the demand for irrigation water. Given that the country's water resources are limited compared to the neighboring countries, the problem of irrigation water supply is deepening. Due to this, increasing productivity through efficient and sustainable use of existing arable land is one of the major challenges.

Most farmers use ploughing by turning the topsoil to prepare the soil for planting. Only some agroparks have begun to use minimum or zero cultivation method, unlike the conventional method. Ploughing consumes a lot of non-renewable energy by the pulling tractor. The reduction of this energy is the most obvious outcome of reduced till cultivation. Ploughing change the natural layers of soil and increases denitrification of the soil causing GHG emissions instead of conserving soil quality. The reasons for not applying minimum and zero tillage can be explained by the lack of information/knowledge of farmers and the high cost of buying and

¹ <https://biodivers-southcaucasus.org/about>

renting equipment. Often, farmers plant cash crops only without being aware of crop rotation and the importance of diversified cropping cycles. Growing the same crop in the same field over and over again without crop rotation gradually depletes the soil and can cause problems with view to pest and weed control. The costs of establishing windbreak plantations are high. Without incentives and/or subsidies it is not realistic to be implemented on private farms. The land ownership of small farmers with fragmented agriculture land is a strongly hindering factor for upscaling of similar activities. During the pilot activities of the ECOserve project, water losses were observed during irrigation due to the unlevelled soil surface. Due to the unevenness of the arable lands, the amount of water required per 1 ha area and the time spent on irrigation increases, and the productivity decreases where water is collected. It is known that the Azerbaijani government provides subsidies to support agricultural production. From time to time, the government improves the subsidy scheme. It is still recommended to make additions and changes to the existing subsidy scheme to ensure the sustainable use of land resources in practice.

4. Recommendations

4.1 Promoting minimum and zero tillage cultivation

Reduced-till increases soil organic matter by not disturbing the natural structure and conserving the microorganisms. Studies on the effect of no-till or reduced-till consider a reduction of energy consumption of 10-20% to be realistic. Reduced-tillage or no-tillage soil cultivation is one of the pillars of a sustainable soil health and soil fertility strategy.

The following measures are considered appropriate to promote minimum or zero cultivation:

- Granting subsidy for purchase of minimum or zero cultivation machineries
- Reducing a rental fee to make the use of these machineries more accessible to farmer
- Organization of demonstration field days for farmers in each district on the use of minimum cultivation techniques as awareness-raising measures

4.2 Granting a subsidy scheme for crop rotation practices

One of the measures to adapt to climate change is to establish a rotation scheme adapted to the local climate and soil conditions. By making efficient use of available resources, it is possible to improve soil quality, gradually increase productivity, and reduce pest, disease, and weed control costs through plants included in the rotation scheme. It is crucial to change the crops planted on the land across a sequence of growing seasons and to plant a series of different crop types.

Therefore, a suitable crop rotation needs to be established. Especially interesting, having in mind the climate conditions, the prevailing water shortage and insufficient irrigation as well as difficult soil conditions of certain areas, are green cover and legumes. Green cover crops come with a lot of benefits with view to improve soil structure and organic matter. The objectives of crop rotation and diversification are the adaptation to climate change, the strengthening of the resilience and to increase rain fed farming practices. The diversification of the crops provides opportunities to introduce salt and drought tolerant crops. "For crop diversification management, four different approaches can be used: continuous cropping, crop diversification and/or rotation, using soil analysis results and remedies for adopted planting, compulsory cover crops. As an example, in Germany, the annual crop ratio on arable land must comprise at least three crops, whereby set aside and unfarmed arable land count as one crop. Each crop shall cover at least 15% of the arable land and a soil humus assessment must be carried out in accordance with a scientifically recognized method." "In the current European Commission proposal for the new Common Agricultural Policy (CAP) reform some practices currently included in Good Agricultural and Environmental Condition (GAEC) such as permanent pasture, green cover and

crop rotation are considered as a possible mandatory greening component of direct payments².” Diversification of the agriculture production is the main objective of the crop rotation. In order to promote the implementation of the crop rotation scheme, it is expedient to carry out activities in the following directions:

- A science-based subsidy schemes and manuals should be developed for the application of the crop rotation scheme in accordance with local conditions.
- Sample crop rotation schemes should be developed by research institutes to suit the local conditions of each region.
- The subsidy rates for growing legumes shall be increased.

4.3 Establishment of windbreaks in arable land

Planting windbreak contributes to the increase of biodiversity in agriculture landscape, reduces evaporation and wind erosion. The ownership and maintenance of the plantation needs to be secured for at least five years. The use of the plantation by animals must be prohibited in the first 5-7 years. A solution to establish the hedgerows could be through subsidy provision. ECOserve provided a detailed action plan (draft version) for the establishment of windbreaks (field-protecting forest areas) as a supportive administrative procedure.

4.4 Saving irrigation water by levelling arable lands

In addition to the uselessness of part of the irrigation infrastructure, the unevenness of arable lands leads to increased water losses and reduced productivity.

Laser land leveling (LLL) is an agricultural field practice to flatten the cropland to an even level plane with a variation of less than ± 20 mm. LLL decreases the cost of operation and ensures a greater degree of accuracy in much lesser time than traditional land leveling. LLL can assist in a more uniform distribution of water and thereby help save 20–30% of irrigation water and improve crop yields by 10–20%³. It is expedient for the state to provide support in obtaining appropriate techniques to solve the irrigation water problem, to improve irrigation efficiency, and to adopt water saving methods. In order to promote the efficient use of water resources in irrigation and increase productivity, it is advisable to implement the followings:

- Apply a special subsidy coefficient for laser land levelling trailers ensure that the branches of Agroservice in each region
- Provide services to farmers on a preferential basis in land levelling
- Organize field days for farmers on the importance of levelling arable lands

5. Conclusion

Subsidies can and should incentivize environmental improvements and more efficient usage of resources. Any scheme must be accompanied by effective monitoring in order to minimize misuse of payments plus advisory services to ensure correct implementation. This also holds true for already existing schemes such as subsidy on soil analysis. It must be understood as an on-going process, needing regular review and assessment by competent state institutions.

Guiding questions to initiate and support the process may be:

- How could such a system look like? What will be a good enough incentive to the farmer?
- By whom (which entity / authority) should a subsidy scheme be managed, and correct implementation cross-checked?

² https://www.researchgate.net/publication/279898511_GAEC_implementation_in_the_EU_situation

³ Laser-land leveling adoption and its impact on water use, crop yields and household income: Empirical evidence from the rice-wheat system of Pakistan Punjab. Akhter Alia, Imtiaz Hussaina , Dil Bahadur Rahutb , Olaf Erensteinb

- Which is the regulatory framework based on what monitoring system?

Areas with high impact potential are:

- Subsidy on investment and/or leasing or rental of implements and machinery for minimum tillage. This may be a reduced interest rate or a grant on purchase price.
- A subsidy on diverse crop rotation schemes including green cover crops and intercropping, e.g.: 5-year cycle with a minimum of one leguminous main crop (chick-pea, lentil, soybean, etc.) and at least two green cover crops. A minimum and maximum subsidy for different intensification levels in regard to number of different crops and number of green cover / intercropping cycles may be considered.
- True cost of water usage must be gradually established within an up to 5-year period. The generated income should be made available for investments in water saving technologies and laser levelling as a revolving fund. Additional money to get this fund started from state budget may be needed in the beginning.



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**Management of natural resources and safeguarding of ecosystem services
for sustainable rural development in the South Caucasus (ECOserve)**

GIZ Office Baku

Winter Park Plaza, 75, Rasul Rza street, office no. 203

AZ 1014, Baku, Azerbaijan

ECOserve@giz.de

www.biodivers-southcaucasus.org