



Գերմանական  
համագործակցություն  
DEUTSCHE ZUSAMMENARBEIT

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# Fodder production demo village – improvement of natural fodder areas and reactivation of non-cultivated arable lands



**PROGRESS REPORT**  
Final

<b>Organization Name or Expert Name</b>	“Shen” NGO
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## Executive summary

### Introduction

According to the 4th National Communication on Climate Change national communication report, the following predictions are forecast for Armenia:

- 4-10% reduction of the total area of pastures and their productivity by 2030
- 7-10% reduction in grass yield capacity, which will lead to reductions in the volume of fodder production
- An estimated 24% of decline in productivity of irrigable lands
- Deterioration (degradation) of agricultural lands and pastures
- Extreme weather and climate change will impact the crops and yield capacity reducing it by 8-14% by 2030

During past years a result of careless exploitation of pastures and hay meadows, the amount of hay/fodder obtained per unit area has dropped sharply, it has decreased by at least 30% (e.g., from hay meadows instead of getting 100 bale/ha, farmers get 60 bale/ha).

In addition to the low volume of hay produced, the low calorific value of the hay produced is also an issue. This is also one of the reasons why hay meadows are grazed instead of being harvested. There is a need to offer up-to-date, affordable ways of improving pastures and grasslands to farmers so that they can improve leased grasslands and pastures themselves.

Non-cultivated arable lands are mainly used as hay meadows or pastures, which has decreased the quality of the soil, plant varieties, and biomass, and this causes the risk of spreading weeds and poisonous plants. This results in the degradation of soil as well as loss of biodiversity and natural resources.

According to the data of the RA Ministry of Economy, 50% of RA arable land and 70% of pastures are not used. There are many reasons for non-use or non-purposeful use of land, but two of the dominant problems are land fragmentation and lack of irrigation.

In order to increase the ratio of targeted land use, the Government of Armenia has approved a program according to which the Government will support land consolidation throughout Armenia during 2023-2025. Its aim is to create larger farms, reduce the cost of crops, and also reduce uncultivated land, ensuring the country's food security. Also, in that program, it is planned that in the case of 30-100 and 100-200 hectares, the costs will be partially reimbursed if a water basin is built or land reclamation is carried out. In the case of 30-100 hectares, there should be at least 10 plots of land to be combined, in the case of 100-200 hectares - 20. In addition to making the change from non-irrigated to irrigated category free of charge, the Government is also ready to reimburse up to 50 % of the reservoir construction costs.

According to the RA Government's decision "On approving the concept and program of measures for increasing the efficiency of agricultural land use", the Government aims to reduce the area of unused arable land to 25% by 2030<sup>1</sup>.

The development of agricultural cooperatives is one of the strategic tasks of the government, and the current policy adopted and implemented by the state fully reflects this. Cooperatives create an opportunity to effectively address issues, such as the fragmentation and small size of the agricultural land plots, limited

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<sup>1</sup> <https://www.arlis.am/DocumentView.aspx?DocID=138498>

resources and inadequacy of infrastructure, lack of access to quality agro-inputs and specialized agronomic services, difficulties with the production cycle, supply chains, and marketing, among other issues.

Taking into account the priorities listed above, **"Fodder production demo village – improvement of natural fodder areas and reactivation of non-cultivated arable lands"** measure was implemented by Shen NGO. The measure supported in the framework of "ECOserve" programme, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH .

Within the framework of the measure, new approaches and concepts have been tested in Balak settlement of Syunik region. The measure supports the cooperative's use of new local seed varieties, advanced cultivation technologies, and equipment, and will become a hub for production, processing, and service provision for farmers. This allows for improved fodder production, decreased pressure on pastures, improved agrobiodiversity, and creation of new economic opportunities for the cooperative and for the local farmers.

The promotion of local varieties is important also from a climate adaptation perspective. The promotion of local varieties with capacity building on appropriate practices serves as a nature-based solution to increase the adaptive capacities and resilience of communities.

#### Problem statement

Syunik region in the Soviet period had huge potential for fodder and crop seeds production, there were a lot of so-called demo plots, that were very much suitable for cultivation crops, and fodder for seed production. Nowadays some private organizations work on the production of seeds. But they use secondary seeds production, i.e. they buy high-quality seeds and sell the first and second generations in the local market. Meanwhile, the production of those generations is relatively low, and farmers do not have good harvest of crops or hay from those seeds.

In the past, in Syunik the local population of sainfoin called "Sisianian local" was cultivated, and until now this variety of sainfoin is registered in the governmental list of allowed and valuable varieties of fodder crop. It is important to mention that this variety is used for hybrid production of new varieties in the Caucasus. Nowadays the Armenian Government, or seed importers buy hybrids that are created from the "Sisianian local" varieties abroad. The level of local production of this variety is very low and endangered, but it is very valuable in terms of local agrobiodiversity and conservation of local varieties from an economic point of view. Due to the war in Ukraine, Armenia faces a large problem importing any types of seeds. So local production of seeds can be one of the most important strategies for the Armenian Government, which can also contribute to Food Security among others.

*Balak Settlement Description:* The project will be implemented in Balak settlement in Sisian consolidated community of Syunik region. Balak settlement has 174 households. The settlement is located at an altitude of 1700 m above sea level. Animal husbandry, grain crops production and small amount of potato production are mainly developed. Balak settlement has 524 ha of arable lands, from which 86 ha private, other community-owned: 220 ha arable lands are rented by the villagers, other 218 ha of arable lands not used for their purposes, used as pasture or cutting for hay. Settlement has 180 ha of pastures and 34 ha of hay meadows.

In Armenia, there are many valuable barley varieties obtained through local selection, which are intended for obtaining malt for beer production. Today, there are 2 hydroponic fodder production units established in Shaghat (nearby Balak) and Shaqi settlements, which import barley seeds from the Russian Federation because only food-grade barley is grown in the region. Hydroponic fodder production is an innovative solution to get more fresh, green fodder even in the winter period and ensure enough feed for animals. The problem is that

there is a big gap between producers, suppliers, scientific centers, and seed farms. Today, based on the social situation and considering the co-financing component of state support, most farmers buy barley seed imported from abroad for a low cost, when they can sow local varieties and find a much better market for their product. There is a need to develop local seed production, to mediate cooperation between existing cooperatives and seed farms.

#### Proposed solution

*The purpose of the measure is to use effective replicable methods for the rehabilitation of natural fodder areas and decrease pressure on pastures by cultivating unused arable lands for fodder production. Ensuring sustainability by using high-value local varieties of seeds for fodder production and ensuring agrobiodiversity conservation, climate adaptation, and income.*

The measure included complex pilot areas using different methodologies for improvement. In the framework of the measure, **123 ha of land** has been rehabilitated and/or improved in the community, out of which: 20 ha pastures, 20 ha hay meadows, 83 ha arable lands.

The main aim of "The Balak Village Seed Producer and Pasture Users Association" Cooperative is to ensure sustainable pasture management and create additional fodder for the cooperative members and for the villagers to decrease pressure on the pastures.

The cooperative provided agriculture machinery services such as ploughing, sowing, hay cutting, raking, and baling. Attempts at secondary seed production of cereals have been made in the past by some members of the cooperative. However, with the support of this program, they plan to make seed production the main direction alongside fodder production. Cooperative has 25 members.

"The Balak Village Seed Producer and Pasture Users Association" Balakfor the "first time" implemented several steps and methods for the arable land, pasture and hay meadow rehabilitation:

- 20 ha of pastures has been leased from Sisian enlarged community for the period of at least 3 years and cleaned from stones,
- 20 ha of hay meadows has been leased from Sisian enlarged community for the period of at least 3 years,
- Extra-root fertilizer has been used/sprayed in pastures and hay meadows to help the nutrients to be absorbed from the leaves and stems of the plants,
- Non-grazing has been ensured for at least one year (cooperative informed the villagers and local administration that these areas will be not grazed, and the cooperative controlled the process),
- Arable lands have been improved (52 ha leased by farmers and 31 ha leased by the cooperative). Arable lands have been improved through cultivation of sainfoin, barley, and alfalfa local varieties to ensure additional income for the farmers and the cooperative.

The measure allows the cooperative and the 25 member farmers to produce not only fodder from the 83 ha of arable lands, but also fodder seeds (sainfoin, barley, alfalfa). Fodder seeds will help to extend fodder production in Balak and nearby communities, ensuring improvement and use of arable lands that are not cultivated or used for their purpose. The measure also helps to reduce the pressure on pastures and natural fodder areas. With the support of the cooperative, 31.3 tons barley seeds were produced in the settlement in 2023.

This measure served as a continuation of the "**Fodder Production and Pasture Improvement as COVID-19 Response Measure**" implemented by Shen NGO with the support of ECOserve programme of GIZ commissioned by BMZ in 2021-2022. Based on the experiences of the latter, some modifications and lessons learned have been applied here such as:

- Using local varieties of seeds instead of importing
- Cultivating the soil starting from autumn with combination of methods (ploughing, cultivation, tilling)
- Early spring sowing
- Capacity building of local farmers and local specialist (agronomist) in terms of better use and management of natural resources
- Leasing of pastures and hay meadows by the cooperative, the objectives of which include ensuring better management of the natural fodder areas (described in the bylaw of the cooperative)
- Income generation from adding value from fodder to seed production and forage making



## 1. Implementation

### 1.1. Implementation Progress and Changes

The measure has been implemented according to the presented schedule and action plan. The team has invested all its resources and capacities to ensure proper implementation of the measure.

The actions taken and the results obtained are presented below.

Task	Achieved outputs	Description
<b>Task 1:</b> Improvement of arable land of farmers by using local fodder seeds	52 ha of arable lands are improved by BalakBalak Cooperative	In the framework of the project, 52 ha of arable land was improved and used for its intended purpose. Local varieties and seeds were exclusively used for cultivation. The seed supply was carried out by the Gyumri Selection Station.
<b>Task 2:</b> Improvement community-owned arable lands, that will be leased by cooperative, by using local fodder seeds	31 ha of arable lands improved by Balak Cooperative	31 ha of community-owned arable land was leased and cultivated by the cooperative. The lease was carried out for 5 years. Barley and sainfoin were sown on leased lands. <sup>2</sup>
<b>Task 3:</b> Rehabilitation of community-owned pastures by the Cooperative	20 ha of pastures are rehabilitated by Balak Cooperative	A community-owned 20 ha pasture was leased by the cooperative for 5 years and improved, using extra-root fertilization, stone collection and controlling of grazing.
<b>Task 4:</b> Rehabilitation of community-owned hay meadows by the Cooperative	20 ha of hay meadows are rehabilitated by Balak Cooperative	A community-owned 20 ha meadows was leased by the cooperative for 5 years and improved, using extra-root fertilization.
<b>Task 5:</b> Creation of fodder base	Fodder base created on 83 ha, which consists: 46 ha sainfoin 35 ha of barley 2 ha alfalfa	A fodder base was formed as a result of the cultivation Sowings 2022-2023: 83 hectare of land were sown by the cooperative: 46 ha sainfoin, 35 ha barley and 2 ha alfalfa  Sowings 2024: 103 hectare of land were sown by the cooperative: 52 ha sainfoin,

<sup>2</sup> Sainfoin - Sisian local, Barley - Nutans 115 varieties.

		31 ha barley, 7 ha alfalfa, 3 ha oat, 10 ha of triticum diccocom.
<b>Task 5:</b> Implementation of seed production of valuable local forage crop species	Production of valuable local forage crop species seed production was implemented in 83 ha	Balakk cooperative cultivated lands for seed production of fodder crops. For this purpose, 83 ha was sown only with locally valuable fodder crops. “Sisianian local” variety of sainfoin, “Nutans 115” variety of barley and “Aparan – 1” variety of blue alfalfa.
<b>Task 6:</b> Seeds refining facility will ensure high-value forage seeds production and selling (cooperative and farmers ensure that they will produce and sell seeds jointly for at least 5 years)	Over the next 5 years since 2024, the cooperative will implement seed production. Accordingly supplying the following quantities of seed for 5years <ul style="list-style-type: none"> <li>• 14,700 kg of sainfoin seeds</li> <li>• 2.000 kg of alfalfa seeds</li> <li>• 56.000 kg of barley seeds</li> </ul>	It is expected, that within the next 5 years, the BalakBalak cooperative will produce barley, sainfoin and alfalfa seeds. In 2023, the cooperative produced 31,300 kg of barley seeds. In 2024, the cooperative produced <ul style="list-style-type: none"> <li>• 34.000 kg barley seeds</li> <li>• 10.800 kg Triticum diccocom seeds</li> <li>• 500 kg alfaalfa seeds</li> </ul> The production of seeds from sainfoin and alfalfa fields will start from 2025.
<b>Task 7:</b> Farmers and the cooperative will ensure additional income from the cultivation of fodder.	306,000 AMD income per farmer <ul style="list-style-type: none"> <li>• 21,430,000 AMD income for cooperative</li> <li>• 671,154 AMD income per farmer</li> </ul>	During 2023, 324.400 AMD income per farmer was received  During 2024, 918.760 AMD income per farmer was received. <sup>3</sup>
<b>Task 8:</b> Part of income from the community-owned lands the cooperative will use for pasture improvement activities, for pasture road rehabilitation, for sowing of the degraded pastures, etc.	Shen signed an agreement with the cooperative, which states that starting from 2nd year until 4th year cooperative have to use 20% from net income for natural fodder areas development, rehabilitation, improvement of pasture infrastructure.	During 2022-2023, the cooperative, with its investment and Shen's support, was cleared of thorns and poisonous plants, more than 40 ha of pasture and hay meadows were fertilized with extra-root fertilizer. No grazing was allowed in that area.
<b>Task 9:</b> Fodder mill will be used to ensure preparation of hay, straw and in the future of fodder pellets production that will be also valuable and high-quality forage for feeding of animal, ensuring increase of milk and meat productivity	At least 1000 bales of straw and combined feed (2023)  At least 6,000 bales of straw of hay and combined feed (2024)	2023data <ul style="list-style-type: none"> <li>- In total, the cooperative received 2100 bales of straw. (On average, 1 ha yielded 60 bales of straw)</li> </ul> 2024 data <ul style="list-style-type: none"> <li>- 3080 bales of straw from spring sows</li> <li>- - 16100 bales of combined feed from sainfoin sows.</li> <li>- 1420 bales from alfalfa sows.</li> </ul>
<b>Task 10:</b> Training of SHEN specialists and regional officials on modern technologies for the restoration of pastures and grasslands.	Trained main and regional staff	04-05.08.23 two-day course on “Modern technologies for improving and monitoring pastures and grasslands” was held for the retraining of the Shen NGO

<sup>3</sup> some of the seeds will be sold in the spring of 2025



		staff. Training was conducted by G.Tovmasyan.
<b>Shen NGO and Cooperative investment side activities</b>		
<b>Task 11:</b> Provision of agricultural equipment for cultivation of arable land	Provision of agricultural equipment to strengthen cooperatives	The mechanization portfolio of the Balak cooperative has been supplemented with new equipment: a tiller, a suspended sprayer and a cultivator.
<b>Task 12:</b> Provision of a seed refining equipment and fodder mill	Provision of agricultural equipment to strengthen the cooperative's seed production capacity	Balak cooperative's resources have been improved with equipment needed for seed production and feed production: a seed refining equipment and a fodder mill.
<b>Task 13</b> Implementation of theoretical and practical trainings on crop cultivation and pasture rehabilitation.	Beneficiaries with increased knowledge on seed production and pasture rehabilitation.	During 2022-2023, 7 seminars were held for 25 members of the cooperative and other farmers of Balak settlement. 129 people participated in the seminars.

## 1.2. Calculations of the actual and expected income received by the beneficiaries

Harvesting of barley started from August 11, 2023. Overall 31,500 kg of barley seeds was produced from which 23,300 kg of barley seeds are marketable and could be sold as seeds.

Summarizing, we can say that the cooperative received the 2023 spring sowing:

Figures	Product quantity,	Unit price	Expected income, AMD
Barley seed of first reproduction	31,500 kg	200	6.300.000
Barley for fodder	8,200 kg	100	820.000
Bales of straw from barley seeds	2100	500	1.050.000
Total			8.170.000
On average, the income received per member of the cooperative is			325.200

Data of 2024 sowing:

In 2024, the cooperative cultivated a total of 103 ha of land, which includes the 2023 autumn and 2024 spring sowings. In 2024, the cooperative cultivated 20 ha more arable land compared to the previous year.

Figures	Sowing area, ha	Purpose of production
<b>Sowing done on the cooperative members' own lands</b>		
Sainfoin sowings 2023	25	For feed and sees production,
Barley sowings	25	For the seed production (as continuation of our demo project using seeds that produced in Balak)
Alfaalfa for fodder	7	3ha is 2024 spring sowing, for feed production
Sainfoin	6	2024 first year sowing, For feed production
Triticum dicoccum	4	to be sold for food purposes
<b>sowing done on the land leased by the cooperative</b>		

Sainfoin sowings 2023	21	For feed and sees production,
Barley sowings	6	For the seed production, An elite seed has been sown- Nutans 115
Triticum dicoccum	6	For the seed production. An elite seed has been sown
Oat sowing	3	for feed production
Total	103	

It is important to note that, in the spring of 2024, the cooperative implemented seed sorting and fodder grinding services:

- performed 11.000 kg seed sorting (7000 kg for other farmers and 4000 kg for cooperative members)
- 1500 kg of grain and about 500 bales of combined feed were ground (milled)



In 2024, the cooperative got a good harvest, part of which was stored and the other part was sold. The table shows in detail the sowings and the harvests obtained and the corresponding income.

Figures	Sowing area, ha	Product quantity,	Unit price (price 2024)	Expected income, AMD
Sainfoin sowings 2023 ( for seed and feed production)	46	0	0	
Barley sowings (For feed production)	25	32.000 kg	100	3.200.000
Barley sowings (For the seed production)	6	9.000 kg	200	1.800.000
Alfaalfa for fodder (2024 spring sowing, for feed production)	3	0	0	
Sainfoin (2024 first year sowing, For feed production)	6	0	0	
Oat sowing (for feed production)	3	4.500 kg	90	405.000
Triticum dicoccum (to be sold for food purposes)	4	5.200 kg	100	520.000
Triticum dicoccum (For the seed production)	6	10.800 kg	300	3.240.000
Bailes for fodder from sainfoin sowings	46 ha	16.100 bales	700	11.270.000
Bales for fodder from Alfaalfa sowings	4ha	1.420 bales	700	994.000
Bales of straw from Barley, Oat,	44 ha	3.080 bales	500	1.540.000

Triticum dicocum sowing	(31+3+4+6)			
Total				22.969.000
On average, the income received per member of the cooperative is				918.760

It is important to note that barley and beech seed among the mentioned products are stored and will be sold in the spring. In winter it will be filtered and bagged.

The members of the cooperative also generated a separate profit from the management of 20 hay meadows. This year, as a result of favorable climatic conditions and measures implemented in previous years, high-quality harvest was obtained from the meadows. An average, 160-180 bales of hay were harvested from 1 ha. The cooperative received about 3,200 bales of grass, the market value of which was 400 AMD/bale, making a profit of 1,280,000 AMD.

### 1.3. Conducted courses and trainings for the beneficiaries

During the project, the project experts in target Balak settlement, carried out 7 trainings. 129 farmers were trained. The thematic structure of trainings and the number of trained farmers is presented below.

Data	Type of training	Heading	N of participants	Female participants
24.02.23	Theoretical	"Features of seed production, care of crops: barley, alfalfa and sainfoin seed fields."	19	4
03.03.23	Theoretical	"Description of arable land, pasture, and grassland improvement technology,"	22	5
30.03.23	Practical	"Use of modern agricultural machinery, tillers, and other implements in sowing and harvesting grain crops"	16	7
06.04.23	Practical	"Varietal composition of provided seeds of barley, sainfoin, alfalfa, and their cultivation features." Researcher A. Harutyunyan from "Gyumri Breeding Station" CJSC as a trainer.	17	4
16.05.23	Theoretical	"Usage of modern foliar nutrition and weed control measures in grain and fodder crops".	20	9
25.05.23	Field visit	"Visit of the members of the Balak cooperative to the seed fields of the agricultural consumer cooperatives "Khor Virap" and "Ani Alek" of Ararat marz"	20	6
21.08.23	Practical	"Methodology for determining the right dates for harvesting of grain and fodder crops, harvesting and post-harvest works"	15	5
Total			129	40

A regional specialist was involved in the project by Shen. Young agronomist was selected from the Agrarian University branch in Sisian. During the measure, Shen's staff and the newly selected young regional specialist were trained. A detailed description is given below.

Data	Target	Training
01.03.23	Shen regional staff and new agronomist	Technology of improving arable land and pastures. Specifically the training was on the technologies provided by the measure for the cultivation of arable land, sainfoin, alfalfa, and barley, as well as the technology of improving pastures.
01.04-07.2023	Shen regional staff and new agronomist	Presentation of innovative cultivation technologies planned by the measure.

	Shen regional staff and new agronomist	The advantages of foliar nutrition and the differences in application methods.
	Shen regional staff and new agronomist	Features of seed cultivation: Barley, Sainfoin, Alfalfa.
04-05.08.23	Shen NGO staff	Two-day course “Modern technologies for improving and monitoring pastures and grasslands” was held in the training of the Shen NGO staff. Training was held by G.Tovmasyan

#### 1.4. Implementation Challenges

##### *Difficulties encountered during implementation*

Description of the problem/obstacle	Actions implemented to mitigate the risk
Compliance with mandatory requirements for seed production on private arable land of cooperative members.	There was a fear that farmers would not sow on their private land as required for seed production. It was decided to mitigate that risk to sign an agreement form between beneficiary farmers and Shen. Farmers benefiting from the agreement guarantee to implement the cultivation of demonstration crops according to the planned methodology.
Difficulties in obtaining seeds from the Gyumri breeding station and obtaining documents justifying the uniqueness of that organization.	In order to have the documents confirming the uniqueness of the seeds produced by the Gyumri Breeding Station, it was necessary to contact the Ministry of Economy, because the Gyumri Breeding Station is subordinate to the Ministry of Economy. For this purpose, a meeting was held on 07.02.23 with Varsik Martirosyan, head of the Plant Breeding Department of the Ministry of Economy. The purpose of the meeting was to present the project once again, to discuss the cooperation with the Gyumri Breeding Station, as well as to learn more about the registration procedure and mandatory requirements for seed farms.
Frequent mandatory military musters related to border tensions made it difficult to work with the cooperative.	Most of the members of the cooperative were called to compulsory military service for 1-2 months, which made it difficult to coordinate the work. In order to be more flexible and to organize the work, the team involved more young specialists from the region. The regional agronomist has participated in all the activities of the cooperative and supported the all the implementation processes.

##### *Force majeure difficulties*

Description of the problem/obstacle	Actions implemented to address or mitigate the risk
Explicit requirement of three-phase electricity for the organization of the seeding process.	Negotiations related to the transmission of electricity to the manufacturing area and the subscription to high-voltage electricity, with the National Electric Power Company, the Sisian Consolidated community. As a result, they have submitted an application for a subsidiary and substation project/drawing. The cooperative made a payment for the installation of the substation in the amount of 1,065,000 drams. This investment is not included in the investment planned by Cooperative, but it has been implemented. According to preliminary data, the substation should be installed in September 2023 but it was installed in April 2024. As a result, feed grinding and seeding services were not performed in 2023.
Long-term blockade of the population of Artsakh and displacement of the population from Artsakh in September.	The unstable state of the country caused difficulties for the implementation of the activities planned. The border tension did not allow the members of the cooperative to be fully involved and cover more of the operations in the region. As a result, the

	<p>harvesting was much more difficult. There was no coverage of the results of the measure, and there were no visits of farmers from neighbouring villages to the seed fields to see the activities of the cooperative within the region. In 2024, the website of the cooperative was created and circulated <a href="https://balaq.am/">https://balaq.am/</a>. All Balac Cooperative results are also covered on Shen's Facebook page and website.</p>
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## 1.5. Lessons Learned

During the implementation of the measure, the following lessons learned have come up, which should be taken into account when implementing similar measures:

- There is a need to increase the marketing skills of cooperative members. During the implementation of the measure, it became clear that with the increase in the volume of production, the members of the cooperative will need to use different marketing tools to attract a larger number of buyers. In 2024, Shen plans to conduct special marketing courses for the cooperative, as well as to create cooperation links with other structures engaged in seed production.
- Rejection of new technologies by farmers is mainly due to lack of knowledge and skills. They are willing to adopt a new approach or implement a new technology only after seeing it first-hand or hearing the opinion of another leading farmer. The presence of mechanizers, agricultural specialists, and other reputable farmers among the beneficiaries of the experimental plantings allowed to have many farmers involved and interested in participating in the measure. The direct beneficiaries of the project were the 25 members of the cooperative and the indirect beneficiaries were more than 100 households from the settlements of Balak, Shak, who used the services provided by the cooperative.
- During the seed sale process by the cooperative, it became clear that there is a great interest in quality *Triticum dicoccum* seed in the region. Considering this fact, it is planned to have a 5 ha *Triticum dicoccum* seed field by 2024. Shen plans to support the cooperative in purchasing Elite seed.
- We have tried to involve the representatives of the local self-government body, the active people of the village in all activities of the measure, to raise awareness about the measure, its objectives, and steps. During the implementation of the project, we were able to involve the local government, which directly supported the provision of production space and office of the cooperative for the cooperative free of charge. They assisted in the process of electrification of the production area.



## 1.6. Success Stories

The project has a number of achievements, which are unique not only from the perspective of this specific measure but also for the Republic of Armenia: The initiatives outlined present excellent examples of innovative land management and cooperative-based agricultural development. Here's a breakdown of the key points:

### **1. Land Consolidation via Leasing Community-Owned Arable Land:**

This marks a step toward agriculture land consolidation via jointly land cultivation and and to increase agricultural efficiency. By bringing the community together for joint cultivation, the cooperative fosters collective responsibility, resource sharing, and maximizes land use.

This model could serve as a reference for other communities looking to optimize underutilized or fragmented land. It also holds the potential to increase productivity and encourage social cohesion.

### **2. Lease and Improvement of Communal Pastures and Hay Meadows:**

Leasing communal pastures and meadows is crucial for improving pasture management and sustainability. The cooperative's efforts to improve these lands will provide long-term benefits by restoring soil health and potentially increasing fodder quality for livestock.

This approach could result in a more sustainable livestock system, preventing overgrazing and ensuring the preservation of pastures for future use. In turn, it might reduce the strain on natural resources, improve biodiversity, and ensure higher productivity over time.

### **3. Diversification of Pasture Users' Cooperative into Seed Production:**

The cooperative's shift towards seed production and registration as an official seed producer introduces a new level of self-sufficiency and control over crop quality. This is a new approach to improve the operation of cooperatives and positioning of cooperative more embedding further into the agricultural value chain of primary production.

This move positions the cooperative to influence agricultural practices, improve seed availability, and introduce better crop varieties. It not only enhances their economic potential but also supports surrounding farmers by providing local access to high-quality seeds.

Each of these initiatives has the potential to improve agricultural efficiency and sustainability, while also setting an example for other cooperatives and communities in RA.

## **2. Measures for Sustainability**

The following factors have contributed to the effective implementation of the assignment and to the sustainability:

### *Actions aimed at the sustainability of technology use and further replication of results*

- Shen NGO has regional offices in Syunik marz, who coordinated the regional work and regularly monitored current changes and developments.
- The young agronomist involved in the measure and the cooperative will continue the cooperation on own initiative. There is already an agreement that the agronomist will help the cooperative in monitoring and quality control of the fields.
- Shen NGO implements a number of projects in the beneficiary Marz.
- Over the next two years, Shen NGO will monitor the results of the measure. The best practices of this measure will be presented to the beneficiaries of other projects, thus raising awareness and increasing the possibility of replication.
- Strengthened cooperatives will continue their activities in the region as modernized service providers, carrying the knowledge on improvement process proposed by this measure.

### Economic sustainability actions

- Balak cooperative increased its crops by 20 hectares in 2024
- In 2024, the cooperative initiated sainfoin seed cultivation on 6 ha
- In 2024, the cooperative produced: 9.000 kg of barley seeds, 10.000 kg of triticum dicoccum seeds and 500 kg alfalfa seeds.
- In 2025, the cooperative will receive the first seeds of sainfoin and alfalfa. It is expected to receive about 3000-4000 kg of sainfoin and 1000 kg of alfalfa seeds this year. The price of 1 kg of alfalfa seed in the market is 2500 AMD, and the price of local sainfoin seed is 800-900 AMD/kg.

### Ecological sustainability actions

- All the interventions of this measure have a strongly emphasized environmental approach. All the proposed measures and materials used in pasture fertilization, promotion of flowering, and extra-root nutrition are of biological origin, or such application technology is proposed where the risks of environmental pollution are minimized.
- Improving a pilot area of pastures in all three beneficiary Marzes and disseminating its success and lessons learnt on national level, will enable the replication of the pilot project and/or implementing larger-scale regional or national programs for ameliorating the overgrazed pastures and to consistently shift to scheduled pasture utilization schemes.

## 3. Conclusion and Recommendations

The summary of the results is carried out on the bases of analysis of the obtained results, the questions raised by the beneficiaries, the conclusions drawn as a result of the work with the Balak cooperative.

The Balak cooperative has made significant strides in its diversification into seed breeding, taking its first important steps in this field. Registered in the state licensing system, the cooperative is nearly fully equipped with the necessary tools and machinery to carry out both primary production and the seed production process.

Importantly, the Balak cooperative serves as a living example that rational arable land use and consolidated cultivation can be successfully implemented. Their ability to implement consolidated and effective community abandoned arable land improvement provides a valuable model for other communities.



Furthermore, the cooperative's approach to improving pastures and meadows is noteworthy and can be replicated in other settlements. The lessons learned and methods employed by Balaq can be applied in other Pasture User Cooperatives, those focused on pasture management in various settlements.

Below are the summarized conclusions and recommendations.

### 3.1. Conclusions

The overall results of the measure are:

- Improved and cultivated land surfaces in 2023: 123 ha of agricultural land has improved, from which 20 ha of pastures, 20 ha of hay meadows, and 83 ha of arable lands
- Improved and cultivated land surfaces in 2024: 143 ha of agricultural land has improved, from which 20 ha of pastures, 20 ha of hay meadows, and 103 ha of arable lands
- 20 ha pastures has been rehabilitated by stone collection, extra root fertilization, and banning of grazing for 1 year
- 20 ha of hay meadows has been rehabilitated by using extra root fertilization
- 1033 ha of arable land has been improved by using local high-value fodder seeds, from which “Sisianian local” variety of sainfoin, “Nutans 115” variety of barley and “Aparan – 1” variety of alfalfa
- The Cooperative has been co-financed and with the support of Shen NGO received agricultural machinery, seeds refining, and fodder mill equipment
- In 2023 the cooperative and farmers harvested 31,500 kg of barley seeds and around 2100 bales of barley straw. The obtained harvest generally provides an income of 8.170.000 AMD, from which each member of the cooperative received 325.200 AMD income.
- In 2024 the cooperative and farmers harvested 41.000,500 kg of barley seeds, 4.500 kg of oat seeds, and around 3.080 of barley straw. The harvest of forage from sainfoin and alfa alfa sowings was 17.520 bailes. The obtained harvest generally provides an income of 22.969.000 AMD, from which each member of the cooperative received 918.760 AMD income.

Seed breeding of local, valuable grain and fodder crops is crucial for Syunik Marz and the entirety of Armenia, especially in light of food security concerns and increasing border tensions. These challenges have emphasized the importance of establishing resilient agricultural practices. The formation of a seed breeding unit within the Balak cooperative has allowed the region to optimize its resources and deliver reliable results with minimal investment.

In the course of the project, the need for pasture and hay meadow improvement was underscored. This was not only based on the observed decline in vegetation density and the limited species diversity but was further validated by detailed soil analysis. These findings highlight the necessity for sustainable land management practices to revitalize pastureland and ensure its long-term productivity, particularly in Armenia's rural and mountainous regions. The cooperative has shown that by working together, farmers can not only maximize the efficiency of their own land but also unlock opportunities through the leasing and purposeful use of community-owned land. With the right knowledge and equipment, the cooperative is positioned to advance into secondary seed production, providing an additional source of income for its members.

### 3.2. Recommendations

The recommended measures for improving pastures, arable lands, and secondary seed breeding aim to enhance agricultural productivity and sustainability in rural communities, especially in mountainous regions. Below is a structured analysis of the key points:

#### **Support for Balak Cooperative:**

##### 1. Continuous Training for Cooperative Members:

- Training on seed production processes will empower members with the knowledge needed to maintain quality and improve yield. Continuous learning is critical for adapting to new techniques and technologies.



## **2. Exchange Visits to Experienced Seed Farms:**

- Hands-on exposure to well-established seed farms will help cooperative members gain practical skills and insights, fostering better seed production practices.

## **3. Facilitating New Connections for Seed Sales:**

- Building market links for selling seeds is vital for the financial sustainability of the cooperative. Connecting with buyers will boost income and create long-term demand for locally produced seeds.

## **4. Diversification of Seed Assortment:**

- Diversifying the types of seeds produced will reduce risk and expand the market. Offering a variety of seeds (e.g., grains, vegetables, fodder crops) will cater to different farming needs, increasing relevance in the value chain.

## **5. Contribute to the acquisition of modern equipment of seed storage:**

- Modern seed storage equipment is essential for maintaining seed viability, protecting against pests, and ensuring optimal environmental conditions, such as humidity and temperature control. Proper storage extends the shelf life of seeds and ensures that high-quality seeds are available when needed.
- By investing in both equipment and education, the cooperative can further improve its capacity for secondary seed production, safeguarding the quality of seeds and generating additional income.

This focus on modern technology and skills will not only enhance productivity but also ensure that the region becomes more self-sufficient and better prepared for agricultural challenges related to climate and food security.

## **2. Recommendations to the Government of Armenia:**

### **A. Encouraging Land Leasing and Joint Cultivation:**

- By promoting cooperative land leasing and joint cultivation, the government can restore arable land for its intended use. This will improve land productivity and bring abandoned or underutilized land back into agricultural use.

### **C. Involving Private Producers in Seed Breeding:**

- Encouraging private producers to participate in seed breeding and quality seed production will strengthen the seed value chain. Cooperatives can consolidate land and follow the necessary protocols to meet seed production standards.
- The involvement of both private producers and cooperatives ensures that the value chain is strengthened at multiple levels.
- Development and implementation of leasing packages for seed breeders to purchase specialized equipment and harvesting machines.

### **C. Empowering Cooperatives for Secondary Seed Production:**

- Equipping cooperatives with knowledge and the necessary tools for secondary seed production can open up new income streams. This ensures the availability of high-quality seeds and bolsters the local agricultural economy.

### **D. Encourage Leasing and Management of Pastures and Hay Meadows by cooperatives**

- Promoting the leasing of hay meadows and pastures by cooperatives is a powerful strategy for enhancing the efficiency and sustainability of land use. By encouraging cooperatives to lease communal or underutilized meadows and pastures, land can be managed more effectively, with long-term improvements in mind. To ensure success, pasture improvement

projects should be implemented exclusively through cooperatives, which can utilize and further develop their collective resources.

- Policies should be developed to facilitate the leasing of communal lands to cooperatives, ensuring that legal frameworks and incentives are in place to promote participation.

#### **E. Implementing Rotational Grazing, and Pasture Improvement:**

- Encouraging cooperatives to adopt sustainable grazing practices by implementing subsidized projects for rotational grazing equipment can have transformative effects on pasture management. By providing tools like electric shepherd systems, utilizing agro-drones by sowing and fertilizing devices. This will not only improve pasture management quality but also promote long-term environmental sustainability, reduce soil degradation, and boost overall agricultural productivity.

Overall, the implementation of these recommendations will empower cooperatives, improve land management, and contribute to more sustainable and efficient agricultural practices. Through cooperative-based secondary seed production, diversified seed offerings, and improved pasture management, rural communities can increase their income and agricultural resilience.

These recommendations will enhance the management of pastures, and grasslands, making them more productive and sustainable. This is particularly relevant for mountainous regions, where effective land use is crucial.

## **4. Appendices**

**A1:** List of GIZ Trainings Summary

**A2:** List of beneficiary farmers

**A3:** List of grain yield data obtained

**A4:** Arable land and pasture improvement technology

**A5:** Agenda and attendance sheets of all events carried out

**A6:** Pictures



ENVIRONMENT, CLIMATE,  
OPPORTUNITIES  
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**Management of natural resources and safeguarding of ecosystem services for sustainable rural development in the South Caucasus (ECOServe)**

**Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH 59  
Hanrapetutyan st., 9th floor  
00110 Yerevan, Republic of Armenia  
T +374 10 510065  
I [www.giz.de](http://www.giz.de)  
<http://biodivers-southcaucasus.org/>**