

## GEFF Tajikistan Podcast #4: Orchard on a hill slope

### ***GEFF Tajikistan marketing expert:***

Welcome to the fourth episode of the GEFF Tajikistan Podcast Series! We continue to highlight climate change impacts and green solutions applicable for the Tajik context.

According to the data of the United Nations Framework Convention on Climate Change - Tajikistan is highly vulnerable to climate change, the temperature in Tajikistan will rise from 1.8 °C to 2.9 °C by 2050. Should these projections be realized, the effects of climate change will negatively impact the country's water resources, agricultural sector, transportation infrastructure and public health. Green economy investments are good for the economy and the environment. They reduce greenhouse gas emissions by enhancing energy and resource efficiency. GEFF Tajikistan invests in high performing green technologies that aim to scale up Tajikistan's climate financing. It has a direct impact on investors – through reduced expenses, increased competitiveness and improved life quality. GEFF partners with its network of financial institutions to reach small businesses and individuals.

The GEFF Tajikistan Podcast series are focused on agri-business and agricultural value chains, it features conversations with local experts as well as agronomists and engineers. I'm Aziz Gafarov, GEFF Tajikistan Marketing Expert. During the last episode of our podcast we were talking about modern cold storages and how to improve overall storing and cooling. The podcast is available for download on our website [www.ebrdgeff.com/tajikistan](http://www.ebrdgeff.com/tajikistan).

Our current podcast episode is about orchards on hill slopes. One of the important tasks in agriculture is to increase the production of fruit and berry crops. The cultivation of fruit trees is especially important in mountainous countries where there is a lack of arable land. Our guest, Mr. Jamshed Boboaliev, GEFF Agri-finance expert, will share his views on the benefits of the orchards on the hill slope, as a means of achieving competitiveness of the agricultural value chain and improvement of climate resilience in Tajikistan.

As we know, there are many orchards in Tajikistan, Mr. Jamshed Boboaliev, could you please share with us, what makes orchards on hill slopes unique and why it can be considered as innovative?

### ***GEFF Tajikistan agri-finance expert:***

First of all, the cultivation and use of fruit trees are especially important in mountainous countries, where there is a lack of arable land. For generations, farmers in mountains have grown small-sized orchards and vineyards on hill slopes, arid rainless soils where they were not able to grow vegetables and cotton. It was not something entirely new. Tajikistan is a mountainous republic. From the 143,100 square kilometres of its territory, only 7% are represented by plains, foothill and gentle mountain slopes. Based on this, horticulture in Tajikistan should also develop mainly on foothill and mountainous areas.

Farmers are familiar enough with such planting. On the other hand, they are also experienced in planting trees on irrigated lands, where the local climate is not suitable for the cotton growing. Orchards on hill slopes were not so popular because of problems in irrigation. Farmers had to irrigate the orchard manually.

In recent years, however, it is observed that farmers are starting to cultivate in remote mountainous areas more often. This is, partially due to the new program 'Garden and viticulture development program in Tajikistan (2016-2020), which forbids using flat, arable lands for orchard purposes. Taking this into account, the government forbids creating conventional orchards on flat arable lands, but only

on rain-fed lands, which are in most cases sloped, steep lands.

***GEFF Tajikistan marketing expert:***

Can you tell us how this technology or rather method of planting is different from planting on a flat land? What can be the motivating factor for farmers to increase their field activities on hill slopes in the future?

***GEFF Tajikistan agri-finance expert:***

The crucial benefit of planting trees on the hill slopes is mainly to prevent soil erosion. On flatlands, the fertile soil is eroded much less in comparison to the soil on hills. It is basic physics. In order to prevent such erosion processes from occurring which can result in infrastructure damages as well, the state has to build up gabions and terraces, reinforced with retaining walls made of stone, brick, logs or concrete. However, if a farmer plants trees using a terrace-shaped agrotechnical measure, together with lucerne or wheat, such orchards can not only prevent soil erosion, but create additional income for the farmer.

As I said above, the recent program on horticulture forbids a farmer to create conventional orchards on flat lands. As such the choice is between creating intensive orchards, which require higher initial costs or planting trees on hill slopes.

***GEFF Tajikistan marketing expert:***

Yes, your point is clear. You mentioned trees in combination with lucerne or wheat, what exactly did you mean by that and why is soil erosion a noticeable problem for farms?

***GEFF Tajikistan agri-finance expert:***

The soil erosion usually occurs after intensive rain (i.e. kinetic energy of rain drops), and is affected by factors such as the soil infiltration ratio, land steepness and etc. What are trees and bush-plants usually needed for? Their root systems hold the ground quite firmly and their leaves reduce the kinetic energy of the rain.

The problem of the soil erosion of orchards in slope areas of Tajikistan is more serious than it is sometimes imagined. Very heavy falls of rain are often experienced during the early spring and autumn months. On sloped land, considerable surface run-off is unavoidable and there is then a high risk of losing valuable topsoil. The danger is increasing by the fact that the soils of many of our orchards have very little surface grass cover at that time of the year, especially when the land has been cultivated over the summer months. The nature of many types of soils is that they can be washed very easily. The greatest risk of soil erosion is usually found in a new orchard site which has been ploughed or ripped in preparation for planting.

Another serious process is the gradual removal of topsoil by water moving over the soil surface. This type of erosion is known as "sheet erosion". Unchecked, it continues over the years, gradually lowering the soil level in the orchard and depositing the soil in drains, creeks and along fence lines. The loss of topsoil in an orchard is serious because topsoil is the most fertile part of the land. A gradual lowering of the soil surface also means that cultivation is more likely to damage tree roots. Contour planting can also considerably help in reducing the problem of soil erosion in the orchards.

***GEFF Tajikistan marketing expert:***

Interesting answer, thank you. And to what extent of land steepness should the farmers think about

creating terraces?

***GEFF Tajikistan agri-finance expert:***

As soil experts point out, with steep slopes, a tendency for terracing becomes very pronounced. Such slopes are of course unsuitable for a normal square or diamond planting. This means that in very steep slopes, orchards should not be created, if other suitable land is available.

With moderate slopes, however, terracing should not become developed enough to present any serious problems. At the same time, this is one more reason why cultivation should be kept to a minimum. Some degree of terracing provides an added means of reducing the amount of surface run-off. Once again, a good grass cover should also be encouraged by applying a dressing of superphosphate and sowing down sub cover as soon as possible, this application should not be underestimated.

***GEFF Tajikistan marketing expert:***

What statistics can be given regarding the harvest from rain-fed lands of Tajikistan?

***GEFF Tajikistan agri-finance expert:***

From rain-fed fields, which in Tajikistan occupy tens of thousands of hectares, you can get a good harvest of high-quality fruits, which is quite enough to satisfy the needs of the population of our republic. According to the Department of Crop Production, 119,954 tons of fruits and 4,817 tons of grapes have been harvested so far this year, which is 4,341 tons more than in the same period of last year and 1,512 tons more grapes than in the same period last year. Farmers from Khatlon have harvested 50,719 tons of fruits, 3,938 tons of grapes, farmers from Sughd 62,900 tons of fruits, 200 tons of grapes, and in RRS 6,335 tons of fruits and 679 tons of grapes. A minimum of 80% of these harvests come from steep lands.

***GEFF Tajikistan marketing expert:***

Thank you for sharing your thoughts Mr. Jamshed Boboaliev. Can you elaborate on the costs of such agro-technical measures on hill slopes?

***GEFF Tajikistan agri-finance expert:***

Well, I am afraid, there is no one definite answer to that question. The cost of an orchard on a hill slope purely depends on farmer's preferences. Trees cost from 5 TJS to 50 TJS and roughly 200-250 of trees are needed per 1 hectare of the land, if someone intends to plant them on a conventional manner. Modern orchard consists of roughly 2500 trees per 1 hectare of the land. And lucerne would cost something in the order of 350-450 TJS per 1 hectare of land. Agrotechnical works require roads and moderate steepness, otherwise all cultivation and plantation works must be done manually. All these factors must be taken into account and they vary in price from region to region.

***GEFF Tajikistan marketing expert:***

Many thanks for coming and sharing your expertise and opinion Mr. Jamshed Boboaliev. We hope this information will help our listeners understand the benefits of orchards on hill slopes and act accordingly.

Now my colleague will share with us a success story of a local farmer, who invested in an orchard on a

hill slope to boost farming productivity and income. Mr. Karomatullo Ismatov is a farmer with 20 years of experience and manages 3.8 hectares of land. The farm is located in the Tursunzoda district, which is well-known for its high-quality grapes. Zamira, please go ahead with details of the case.

***GEFF Tajikistan marketing expert:***

Hello, with pleasure. Mr. Ismatov approached one of the partner banks that the European Bank for Reconstruction and Development (EBRD) works with, and obtained a loan to purchase seedlings and plant them. According to the farmer's calculations, 4-5 years are needed to collect the first harvest of grapes which could reach 20 tons per 1 hectare. In the meantime, he has planted lucerne and water melons between the rows in order to cover some expenses.

The newly planted orchard, prevents soil erosion and landslides, that had damaged village houses located at the bottom of the hillside is now in the past. The farmer estimates annual soil savings of 5.34 tons.

***GEFF Tajikistan marketing expert:***

In addition, Mr. Ismatov received European Union investment incentives of 30%, which makes the financing more accessible to farmers.

***GEFF Tajikistan marketing expert:***

"This investment is very important in preventing soil erosion and ensuring sustainable lands for farming. The new orchard on a hill slope ensures safety and the continued use of the rain-fed lands at the bottom of the hill." said Mr. Karomatullo Ismatov.

***GEFF Tajikistan marketing expert:***

Interesting. So, thank you for this encouraging story. I would like to reiterate that the Green Economy Financing Facility Tajikistan is a product of the European Bank for Reconstruction and Development, working in cooperation with the European Union, the Green Climate Fund and the Republic of Korea. The Facility operates through Participating Financial Institutions in Tajikistan, supporting its green economy transition with \$25 million of financing for energy and resource efficiency investments. GEFF Tajikistan supports various innovative green technologies. For more information, please visit [www.ebrdgeff.com/tajikistan](http://www.ebrdgeff.com/tajikistan) or find us on Facebook.

This is the fourth episode of the GEFF Tajikistan podcast series which are held on a biweekly basis, thank you, our dear listeners, for your attention and stay tuned for an upcoming podcast on the Water Storage technology. We also recommend you to continue wearing your mask and practice social distancing. Please take care of yourself and loved ones during this coronavirus pandemic. Goodbye!