

GEFF Tajikistan Podcast #2: Modern Greenhouse

GEFF Tajikistan marketing expert:

Welcome to the second episode of the GEFF Tajikistan biweekly podcast! We continue to highlight climate impacts and green solutions applicable for the Tajik context. With a more pressing environmental challenges across the world like energy shortages, global warming, pollution, rising urban population, agribusiness, farmers and households are looking into the future to see how adapting and using green technologies can help change the future. We believe that green technologies can deliver key practical benefits for local private sector, such as improved productivity, reduced costs, increased competitiveness, improved brand recognition and improved profitability.

I'm Aziz Gafarov, GEFF Tajikistan Marketing Expert. During the first episode of our podcast we were talking about farm mechanization and how to improve farming productivity. The podcast is available for download in our website www.ebrdgeff.com/tajikistan. I would like to reiterate, that 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. The Green Economy Financing Facility Tajikistan, 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. "Green Investments" make business sense by minimizing the impact on the environment. Together with the donors and financing partners, GEFF Tajikistan is supporting Tajikistan's transition to a green economy.

Our second podcast episode will cover modern greenhouse systems. The greenhouse technology has evolved from being a niche cultivation system for specialty crops to becoming the backbone of intensive agriculture both in developed economies and in new emerging markets. Our Deputy Team Leader, Mr. Usmonkul Boturov, will share about the types of the greenhouses, advantages and disadvantages of different types and green solutions that can enhance competitiveness of the agricultural value chains and improve climate resilience in Tajikistan. As we know, greenhouses are a commonly used agriculture technique in Tajikistan, Mr. Boturov, could you please share with us, what kind of greenhouses exist and which should be considered as innovative/modern and clarify what is the difference between open field farming and greenhouses?

GEFF Tajikistan Deputy Team Leader:

Hello, the greenhouse structures of various types are used for crop production. Although there are advantages in each type for a particular application, in general there is no single type of greenhouse, which can be considered as the best. Different types of greenhouses are designed to meet specific needs. The types of greenhouses based on shape, covering material and construction are briefly described as follows:

- ✓ Greenhouse types based on the material of the cover: Glass, Polycarbonate, Plastic film and Plastic net
- ✓ Greenhouse types based on its shape: Tunnel houses, Roof houses, Chinese type and Trench type.

Due to increased temperatures, droughts or unexpected snow in spring, as it was the case this year, growing crops in open fields is getting harder and harder. Farmers began to use a lot of pesticides to control agricultural pests. This is especially evident in production of vegetables. We observe that year by year, vegetable productivity drops. The production of vegetables in greenhouses is one of the main ways to eliminate these shortcomings. We all know that in greenhouse production of vegetables the environmental impact on crops is minimized, pesticides are used much less, and yields are much

higher, and one can also produce fresh vegetables at any time of the year.

GEFF Tajikistan marketing expert:

Technology is essential for any business to function efficiently and effectively. And could you tell us why greenhouses are important? What can be motivating effect on the farmers to further increase greenhouse production in the future?

GEFF Tajikistan Deputy Team Leader:

The population in Tajikistan is expected to increase from 9,5 to 14,5 million by 2050 (UN, 2018). This represents population increase of 53%, which in turn means that there is an urge need to increase cultivated land area, since standards of living and demand for agricultural products rise exponentially. Greenhouse cultivation could be one of the ways to increase vegetable productivity to fulfil growing population demand. The main motivation for farmers would be how greenhouse production can boost their income, ensure year-round production which will bring even more income to farmers throughout the year.

GEFF Tajikistan marketing expert:

Yes, you are right. Choosing the right location of the land for a greenhouse requires some technical expertise. Please tell us how a farmer should choose a location for the construction of a greenhouse.

GEFF Tajikistan Deputy Team Leader:

For construction of a greenhouse, the site geographical location and soil structure should be considered. A greenhouse cannot be built on areas where there are mudflows, rocky terrain or exposed to strong winds. The site for a greenhouse should be bright and sunny, where the groundwater is 1.5-2 meters deeper. To grow tomatoes and cucumbers, you need light, water and fertile soil. Important conditions for choosing a site are the availability of water, electricity and good roads. Given all these requirements, farmers can build small greenhouses in their yards or on their own land plots.

GEFF Tajikistan marketing expert:

What varieties and hybrids of tomato and cucumber are recommended to be grown in greenhouses? What is the optimal temperature for growing tomatoes and cucumbers in greenhouses? What types of harmful insects are observed when growing early vegetables in greenhouses? Please briefly explain these points to us.

GEFF Tajikistan Deputy Team Leader:

In modern greenhouses, tomato hybrids of Chinese and Israeli breeding, such as Charlotte, Bella, Buran, Elpida, Lamia, Wazira, Zamira, Donatino, Alamina, A9, are recommended. To grow cucumbers, farmers can use hybrids of Orzu, Danimet, Picalino, Espadana, Kadiyar, Kemre, Fonta, Fontina, Bebino and others. When choosing seeds of tomatoes and cucumbers, it would be nice for farmers to consult with experienced greenhouse specialists and purchase them from official suppliers. For good growth and development of tomatoes, the best temperature during the day is 22-26 degrees, and at night 16-18 degrees. When the temperature in a greenhouse drops below 10 degrees, tomato seedlings will sprout. Cucumbers require heat and moisture. The optimum temperature for cucumbers is 28-32 degrees during the day and 18-22 degrees at night. Given these factors, it is necessary to regularly monitor the temperature inside the greenhouse.

In greenhouses, early vegetables are mainly affected by whiteflies, lichens, thrips, spiders and tomato moths. The use of traps with pheromones gives good results for the fight against whites, claws and tomato moles. Depending on the season and the biology of the pest, a greenhouse is regularly chemically treated with pesticides.

GEFF Tajikistan marketing expert:

In your opinion, the main reasons for the rapid spread of greenhouse technology in Tajikistan?

GEFF Tajikistan Deputy Team Leader:

From a consumer point of view, greenhouse technology has provided a wide availability of high-quality vegetables and fruits, produced all year round at affordable prices, a factor that has undoubtedly changed the market dynamics in a permanent manner. From a technological point of view, the reasons for the rapid expansion of greenhouse technology and, in particular, of greenhouse horticulture are manifold, but one main factor arises above all other considerations. Indeed, the possibility to control the microclimate inside the greenhouse independently of outside environmental conditions has made it possible to cultivate a wide range of high-demand crops in latitudes where, due to their harsh cold or warm environmental conditions, horticulture would otherwise be limited to seasonal, lower-productivity crops.

GEFF Tajikistan marketing expert:

And what are the main benefits of greenhouse investment decisions? After how fast do farmers reach the profitability of production in greenhouse business?

GEFF Tajikistan Deputy Team Leader:

Greenhouse crop production offers great potential: If you're unsure whether you want to invest in one, here are five major benefits of a greenhouse to help you decide.

- ✓ Increase productivity by unit of land area and extend the duration of the cropping season.
- ✓ Reduce water consumption by using drip irrigation systems
- ✓ Offset the effects of climate change by protecting crops against variable climate conditions.
- ✓ Improve pest and disease control with reduced use of chemical pesticides and more widespread adoption of biological control.
- ✓ Provide control over production planning to meet consumer demand with higher-quality and safer products.

Regarding your second question, experience shows that farmers were able to cover construction costs and earn a profit from the second year of operation of greenhouses. Greenhouses of a new type, which require higher investments, will be profitable from the 4th year of operation.

GEFF Tajikistan marketing expert:

Thank you for sharing. That helps our listeners understand the investment costs and very useful for those who are considering to construct a greenhouse, what about the suppliers of materials or vendors? Where can one get all necessary materials? If one decides to construct a greenhouse, could you please share what kind of greenhouse style/frame, doors and coverings should one choose?

GEFF Tajikistan Deputy Team Leader:

For locally constructed greenhouses all materials could be found in the local market, cover materials (plastic film) and clippies could be find in Agriculture (seed) shops. If one decides to construct a greenhouse, it depends on site location. For places located in a cool area, more energy efficient solar green houses are constructed. For places located in a valley, mostly tunnel and roof greenhouses are used, but the cover material and style depend on the farmer's financial possibilities, because the cost could be very different.

GEFF Tajikistan marketing expert:

Many thanks for coming and sharing your expertise and opinion Mr. Boturov. We hope this information will help our listeners understand the greenhouse technology and would be very useful for those who considering to construct a greenhouse. Now my colleague will share with us a success story of a local farmer, who invested in a modern greenhouse to boost her production of tomatoes and become more environmentally friendly, by reducing her water consumption. Zamira, please go ahead with details of the case!

GEFF Tajikistan marketing expert:

Hello, with pleasure. We are glad that women are keeping abreast modern healthy farming technologies, which allow them supply to the high end of the markets in Tajikistan. Ms. Sayorakhon Tojimatova is one of them. She has been growing vegetables, including tomatoes and cucumbers, on her farm for more than 20 years. Her farm is located in the Tursunzoda district, a rapidly developing region, due to increased border trade with Uzbekistan. She saw this as an opportunity to grow her business. Ms. Tojimatova approached one of EBRD's partner banks for a loan and invested in a 1,200 sqm greenhouse. The greenhouse will allow her to grow around 3,000 tomato plant stocks, which is an increase of in crop yield, from approximately 2,500 kg to 6,000 kg. The investment is beneficial for productivity as well as for the environment. Significant reductions in water consumption are expected – 1,980 m3 per year.

GEFF Tajikistan marketing expert:

Thanks, our donors' support, Ms. Tojimatova received a European Union investment incentives of 20%, which makes the financing more accessible to farmers. The Facility supports gender activities in order to enhance women and men's equal opportunity to access finance for green technologies such as agri-machinery, drip irrigation systems, greenhouses, intensive orchard, cold storages as well as energy-efficient food processing equipment.

GEFF Tajikistan marketing expert:

It is important to mention that the investment creates value both in short and long run. With a larger harvest, apart from local district markets, she can also sell to larger supermarkets in Dushanbe. It is really an encouraging story and a good example of how women are positively contributing to Tajikistan's transition to a green economy. We hope she will continue to improve farming practices and we wish her good luck for a bright and prosperous future. This story demonstrates, that each woman is able to start their own greenhouse business, also implement green solution and enjoy growing their own food. By the way, Aziz, do you know why is a greenhouse called a greenhouse?

GEFF Tajikistan marketing expert:

Greenhouses were originally referred to as botanical gardens. But since the term "greenhouse effect" has been introduced to describe the way a portion of the sun's heat is absorbed by the earth's atmosphere, which keeps our planet warm at night, there has also been a shift to the name of the

currently known greenhouse. Am I right?

GEFF Tajikistan marketing expert:

Sure, this is because the same process that warms up the earth, also takes place in a greenhouse, where the glass structure will capture the sunlight and the area under the glass will heat up. That is why now greenhouse is the widely used term to describe these glass or polycarbonate structures.

GEFF Tajikistan marketing expert:

Interesting. So, thank you for really an 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. The program supports gender activities that aim to enhance women and men's equal opportunity to access finance for green technologies. For more information, please visit www.ebrdgeff.com/tajikistan or find us on Facebook.

This is the second episode of the GEFF Tajikistan podcast series which are held on biweekly basis, thank you, our dear listeners, for your attention and stay tuned for an upcoming podcast on the Cold 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. Good bye!