



Report on Peas

Demo farm location

FinExCoop had two demonstration plots for legumes. The first demonstration plot was located in the Village Arkhiloskalo (winter pea) which is located in one of the low humidity regions in Georgia. It is located in the Kakheti region and the main culture produced the last 30 years is winter barley and winter wheat. Before when there was an irrigation in the village people used to have a wine yards. In this area, farmers do not practice crop rotation system which caused soil problems, mainly soil exhaustion. After Soviet Union was collapsed, almost all of the windbreaks were chopped down to be used as woods and as a result it caused soil erosion. According to climate-data.org (<https://en.climate-data.org/asia/georgia/kakheti/arkhiloskalo-321904/>) information, Arkhiloskalo is located at 671 m above sea level and the driest months are January. (28 mm of precipitation) and June, the precipitation reaches its peak, with an average of 106 mm.

The second demonstration plot was located in the village Sakdrioni (spring peas) which is located in Tsalka municipality at an altitude of 1450 meters above the sea level. Humus-rich black soil is prevalent in this region and the main crop in recent years is potatoes. Monoculture agriculture has even led to soil impoverishment and the placement of various pathogens in the soil. Because of these factors, the Tsalka region was selected for pea production and, consequently, for seed turnover, the average annual rainfall in Tsalka is 600-700 mm.

General information

The main goal of FinExCoop is to introduce seed rotation and the use of various modern agrotechnologies in Georgian agriculture. For these reasons these two regions were selected and in each village one farmer was chosen for experimental demonstration plot. In this experimental plots we sowed experimental peas to show other farmers, both agronomical and economical benefits of producing this crops.



Out of all this, the international experts of FinExCoop and the local team worked on the development of the seed rotation. That is why in the 2019-20 agronomic years our team has sowed the pea. All this has shown us that in both Dedoplistskaro municipality and Tsalka municipality quite good results were obtained (especially in unfavorable weather). Therefore, next year FinExCoop together with farmers plans to be actively involved in pea seed rotation in other municipalities as well.

Technical assistance

Because of the COVID-19 pandemic, borders were closed, and it was very challenging to bring international experts to Georgia. The project had to adapt to these harsh conditions and tried to establish connections between the farmers and international experts via online sessions and via local experts.

On August 10, 2020, FinExCoop brought an international expert to Georgia. Our expert inspected the agro-technical measures carried out on the pea plot and determined the reason for the high degree of weed spread on the plot. The expert then explained to the farmer the role of peas in seed rotation on which the farmer also expressed great interest.

FinExCoop had a successful harvest on September 7th. FinExCoop ensured that an international expert arrived to teach the farmer the modern technologies of harvesting and storing peas.

In addition, international experts have made a significant contribution to the production of peas. Despite the pandemic, our local and international remained connections and discussions about farmers and their problems.

Soil preparation / Soil Fertilization / Weed control

For soil preparation demo farmer used heavy discs right after the harvest to reduce evaporation of moisture and raise soil absorbency. After that farmer used cultivator against weed in September.

The farmer didn't use insecticide to spray the seeds because it was already sprayed before by the supplier. During the seeding the demo farmer used 300-kg of P:K 12;52 per ha.



Wheat plot had an irrigation problem which led to the massive impact on grain size.

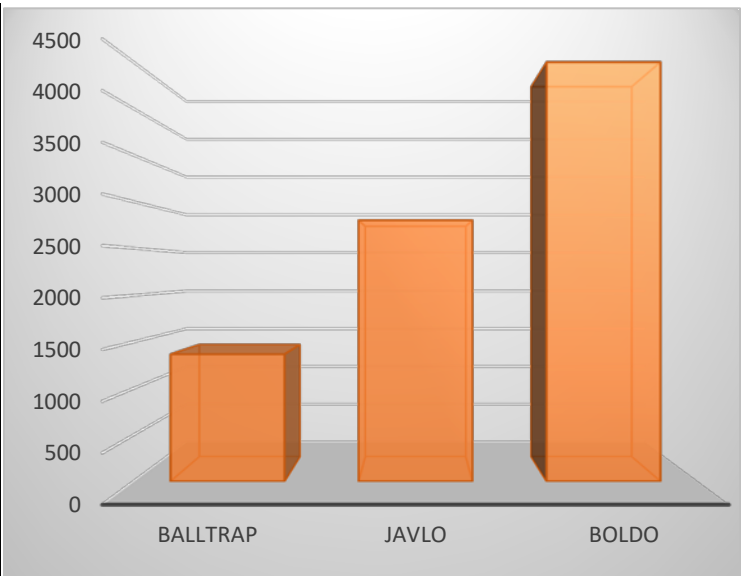
On October 28th farmer with FinExCoop’s team sowed peas. The same day demo plot was rammed. Then on March 3rd to get a better yield the farmer used nitrogen 68 kg per ha. On April 17th the farmer used herbicides and during the April farmer used fungicide. The first of July wheat was harvested by new “Pales” combine and was stored in the storage.

The soil for spring peas was tilled in October while to reduce weeds the soil was cultivated with discs in early spring. Following that, peas were sowed on April 28th under the supervision of the FinExCoop team. Afterwards it was treated with herbicide but unfortunately the pesticide did not work effectively. Because of this, there was a high rate of weed contamination. (The herbicides recommended by the international expert were not on the Georgian market at that time.) Finally, the harvest took place on September 7th under the supervision of an international expert.

Results

Chart below shows yield per ha by varieties

Trial No	Product	Number of ha	harvest Date	Yield
Winter peas				
WP1	Balltrap	0.30	2-Jul	1367.17
spring peas				
SP1	Javlo	0.50	7-Sep	2800
SP2	Boldo	0.50	7-Sep	4500.00



Balltrap (winter pea)

In the case of winter peas, the yield was 1367 kg. For this variety it is a poor yield, however the main reason for this results were unfavorable weather conditions. During the winter we had high frosts and no snow which caused the plant to freeze. We also had very drought spring and summer which resulted pea to have much smaller grain size then it should have had. However in spite of all this, if we look at it from an economical point of view, this crop was still profitable for the farmer. That is why and due to the interest of the farmers we continue to work on the

introduction of this crop into the crop rotation. This legume has enabled the farmer to include new high-protein food for his cattle.

Javlo (spring pea)

In the case of this variety, we had several types of problems. The first problem was the herbicide which did not work well and consequently the crop was contaminated with weeds. The second problem was that the plant failed to cover the soil completely, therefore creating optimal conditions for the development of weeds. The third problem was the grain size which was extremely small. The fourth problem was prone to dormancy. Because of all this. The difference in yield to Bold is due to poor weed control and not to the potential of the genetic material.

Boldo (spring pea)

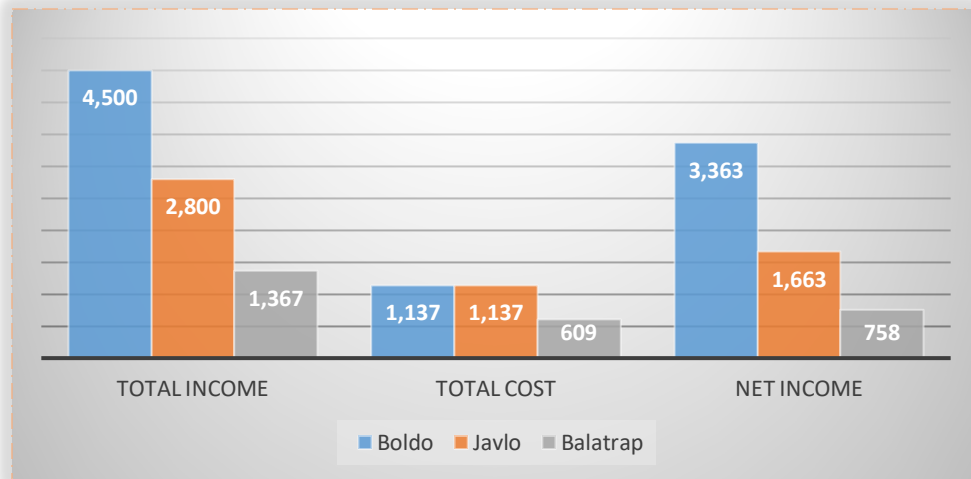
This variety showed the best results among the above varieties. It showed the best quantitative as well as qualitative results. Despite the improperly controlled weed control measures, it was able to reduce the germination of weeds by fully covering the natural soil. In addition it also revealed the optimal characteristics which made it easier for this variety to adopt to the climatic conditions of this region and gave us one of the highest pea yields in this region. It is due to these revealed qualities that FinExCoop intends to include this variety in seed rotation next year.

Analysis

Gross Margin calculator

After the harvest, FinExCoop has done gross margin calculation for each variety. These calculations showed profitability of the seeds. Gross margin calculator enables the farmers to see the financial aspects of their business, analyze the costs incurred and make adequate decisions for the future. Table below shows total income, total cost and net income by variety

Municipality	Farmer		Gross Margin		
			Boldo	Javlo	Balatrap
Kakheti	Nikoloz beniaidze	Total Income			1,367
		Total Cost			609
		Net Income			758
kvemo kartli	Mirad jobava	Total Income	4,500	2,800	
		Total Cost	1,137	1,137	
		Net Income	3,363	1,663	



Recommendation

Even though peas were a new product in Kvemo Kartli and was an unknown product in Kakheti, FinExCoop was still able to interest farmers with this products both in regions where our demonstrate plots were located as well as in other neighboring villages. Since peas show high yields in both regions (despite adverse weather conditions), livestock farmers are also interested in balancing their diet with protein. It certainly prompt great interest because of its benefits.

As for the recommendations as this year's experience has shown us, it is necessary to use high quality seed materials for peas, as well as we need to use easily adabtable varieties. In Kartli and Kakheti regions where early autumn sowing is possible, Baltrap is the suggested variety. Boldo is the recommended variety for spring sowing. It is also necessary to control the standards of the pesticides and FinExCoop's team needs to direct the farmer when, which and how much to use it. Fo the next year we should try both varieties because this year yield was poor duo to weed problems.