«The enterprises are considered as isolated elements independently planning their needs and purchases in the Kyrgyz Republic agriculture,» – Kyrgyz economist Iskender Sharsheev states in the special article for CABAR.asia.

Summary of the article:

- Over the years the agriculture industry in Kyrgyzstan ceases to be the basis of the country’s economy;
- The accession to the EEU did not solve the problems of exporting agricultural products from the Kyrgyz Republic;
- Long-Term observation of trends in agriculture made it clear that agriculture operates according to the uncoordinated system principle;
- There is a need for information exchange, analytical work and information interaction with all farmers.
Kyrgyzstan: Bullwhip Effect On Potato

A record potato crop was harvested in 2018, however, due to the unresolved problems with export to Uzbekistan, non-tariff barriers in the EEU countries, due to the high level of supply in the domestic market, about 500 tons of potatoes rotted. Why? Why did this happen and not even the first year? Similar was with sugar beet and a little earlier with cabbage. Is there a systematic explanation for what is happening with the country’s agricultural sector?

**Not by bread alone**

Over the years agriculture in Kyrgyzstan ceases to be the basis of the country’s economy, which is a natural process throughout the world. Agriculture does not even reach 10% of GDP in developed countries. The only countries in which agriculture is not subsidized and accounts for more than 50% of total export are New Zealand[1], China, India, and until recently the USA[2] There are very few such examples, even close to these indicators. For 2016 the gross output of the Kyrgyz agriculture, forestry, and fisheries was produced by all categories of farms amounted of 197.1 billion KGS. The average KGS exchange rate for 2018 was 68.7 KGS per 1 USD. The growth rate by 2015 was 103.0%. The share of agriculture in the GDP structure is 13.2%.
In 2017 the gross agricultural output in the whole republic was produced at current prices in the amount of 207,378.4 million KGS, including livestock products in the amount of 94,203.5 million KGS, crop production - 108,219.1 million KGS, services - 4,450.5 million KGS, hunting, forestry, and fisheries - 505.3 million KGS.

The growth rate in comparison to 2016 was 102.2%, including livestock - 102.0%, crop production - 102.5%, services - 100%, hunting, forestry and fisheries - 100%.[3]

Let’s see how the share of agriculture in the GDP structure of the Kyrgyz Republic is decreasing according to the National Statistics Committee. Agriculture, forestry, and fisheries lose their share in the country’s GDP. At the beginning of independence, the Kyrgyz Republic had a share of agriculture in GDP from 60% to 40%. By the 2000s, the share of agriculture had fallen to 30-23%. In 2014, the share of agriculture in GDP is already 14.7%, in 2015 - 14%, in 2016 - 12.8%, in 2017 - 12.5%, in 2018 - 11.7% - constantly decreasing (see diagram).

The integration to the EEU did not solve the problem of exporting agricultural products from the Kyrgyz Republic due to the fact that during the oil price boom of 2004-2010, both Russia and Kazakhstan invested large subsidies into agriculture, and since the creation of the EEU, non-tariff barriers appeared. Phytosanitary control is the main instrument for the protection of domestic markets. One of the conditions for the integration of the Kyrgyz Republic to the EEU was the provision by of USD $ 100 million by Kazakhstan for the development of Kyrgyz certifying phytosanitary services. However, this condition was not fulfilled for certain reasons, which are the subject of another article.

**Declining productivity**

It is still surprising that a cow of Kholmogory breed, giving 32 liters of milk per milk yield after it was brought to the Kyrgyz Republic from Russia and milked in our climate, it starts to give 11-10 or 9 liters of milk per one milk yield. The same is with potatoes. The Dutch
potato variety, which harvests 25–30 tons per hectare at home, begins to harvest about 15–12 tons per hectare with formally full compliance with the technology. Maybe it is due to the climate. Maybe it is due to soil productivity. Probably the case is in the absence of special fertilizers. It is possible that the technology is not fully complied with because the climate in the Kyrgyz Republic is tough, the requirements for cleanliness and the use of special technologies and equipment in the country are not complied with.

But this observation does not explain some facts. For example, why even in such a harsh climate, non-compliance with technology, with minimal use of medicines (due to the fact that the farmer simply does not have enough money), there is a product overproduction. Why, for example, all the warehouses are filled with potato and it has become extremely difficult to sell it in local markets and abroad.

**Lemmings run to the cliff because all lemmings do this**

Long-term observations of agriculture trends made it clear that agriculture operates according to the principle of an uncoordinated system. There is chaos in the agriculture system. There are no analytical centers in agriculture; there is no corresponding service in the Ministry of Agriculture of the Kyrgyz Republic. There are no mutually penetrating communications. Farmers behave like tough competitors, they conceal information from each other, the decision making about the cultivation of the crops is carried out completely independently at their own discretion.

Interesting phenomena occur when farmers see the success of one farmer, or a group of farmers who, in a season planted in their fields, for example, potatoes when all other farmers sowed another cultivation. There is a jump in potato prices at this moment and this farmer gets all the resellers in his yard and field. Resellers pay him a high price, due to this high price the farmer makes a profit, buys machinery and holds a feast.

For example, it happened in 2016-2017. Potato in summer, especially new potatoes, was up to 50 KGS per kilogram in the markets of the Issyk-Kul region. This was due to the influx of tourists. In 2017 the resellers collected potatoes from the field at a price of 8 KGS per kilogram. Resellers were coming from Uzbekistan and exported a lot of potatoes from the Issyk-Kul and Naryn regions to Uzbekistan. Due to this fact the farmers, seeing the extraordinary success of one farmer or one small group of farmers, decided to sow mostly potatoes in the Naryn and Issyk-Kul regions. They expected to sell it from the field at 8 KGS per kilogram.

However, there was an overproduction of potatoes and at the same time, Uzbekistan took certain measures, as a result of which Kyrgyz potatoes did not pass across the border. Non-tariff barriers worked in the EEU countries, these were artificially created difficulties that did not involve customs or tax payments, such as phytosanitary checks, and those resellers who sold potatoes across the border in Almaty in Astana reported that their profits were one to one – which literally means that there was no profit, they earned as much as they spent.
and at the best case they stayed with a zero balance. That is, they practically did not earn what they earned in 2016 when the ratio was one to two, one to three. This led to the fact that today, up to now, until December 2018, until February 2019, the cost of 1 kg of potato from the field is 4-5 KGS, which is below the production cost and below the expenses level spent by farmers.

What has been endlessly happening throughout the time since independence in our country? Why do farmers wavyly produce the same cultivation, seeing the success story of one or two farmers? Essentially, the Forester effect occurs which is sometimes called a bullwhip effect.

The bullwhip effect is a situation when a small increase in demand for goods from a customer causes a feeling of great demand among manufacturers, the result of which is overproduction. The enterprises in the agriculture of the Kyrgyz Republic are considered as isolated elements independently planning their needs and procurement. In this case, there are significant deviations and fluctuations in the entire logistics chain from the farmer to the consumer’s kitchen. Unharmonious actions of the participants in the logistics chain and insufficient information exchange lead to the so-called Bullwhip effect – the Forester effect, you can call it as you wish.

This effect represents a situation in which minor changes in end-user demand lead to significant deviations in the plans of other participants of the logistics chain. During the Bullwhip effect, the uninterrupted movement of material and information flows in the logistics chain is disrupted, causing the risk of non-fulfillment of the consumer’s order or the risk of overproduction and bankruptcy of the farmer or other manufacturers. This effect is due to the irrational decision-making on the replenishment and formation of reserves. Meaning that if farmers faced with a sharp outburst of incoming orders, they tend to reinsure themselves and, in turn, sow more to ensure an order fulfillment so that it will meet the increased demand with some reserve. When such an overestimated order arrives,
after some time, an outburst of interest in the product, as a rule, gives place to a decline, and an excess of goods is formed in the warehouse. Consequently, the next order will either be postponed until the reserve is spent or significantly reduced in volume. The goods resellers, receiving such irregular orders, in turn, make forecasts with an even greater spread of values and baffle farmers with even greater leaps. However, a closer look at the problem showed that it is not only a matter of the behavioral characteristics of those responsible for determining the need. The Bullwhip-effect revealed a number of objective reasons, among which are the following:

- errors in demand forecasting by experts and the Ministry of Agriculture;
- creation of additional insurance reserves by farmers;
- random increase in the size of crops;
- price fluctuations;
- delays in getting necessary information about needs;
- farmers’ opposition to equitable and fair information exchange with each other about crops;
- deviations from planned terms and volumes of production and supplies.

In simple terms, the situation when farmers go broke is only led by the factor that many farmers want to be slyer, smarter and richer than everyone. At the same time, farmers use general information available in the media. They use rumors. They base on obsolete two-year-old market data. This all leads to inevitable farmers’ problems and forecasting errors. The analysis done by the Ministry of Agriculture, food industry and land development is also mistaken, because it is based on the same customs, traditions, and tools that farmers use. As a result, the Ministry of Agriculture or farmers may decide that next year they should plant more cabbage, onions or potatoes. The farmers will start preparatory work for such crops a year ahead. After that, next year there will definitely be an overproduction of monoculture and the majority of farmers who have significantly invested in this crop will go bankrupt.

What should be done to prevent this? Such a situation would not have happened if farmers equally and truthfully shared all the information about their plans with each other. This is an ideal situation, but unfortunately, our farmers will certainly perceive this idea as nonsense. This is nonsense – to tell your competitor about your plans. However, only such a
system, for example, existing in the Netherlands and France when the community of
farmers quickly exchange news in social networks, saves farmers from bankruptcy and even
brings them more or less income. Exactly this system makes the USA one of the leading
countries in food production, although the farming takes on average 0.4% in their GDP
structure.

Who is to blame is clear. What to do?
What needs to be done to avoid such big problems? The most important thing is – it is
necessary to achieve an equal amount of all planted cultivations in a percentage ratio within
the Kyrgyz Republic. For example, if only such crops as rape, potato, wheat, cabbage, sugar
beet, onion, garlic, rye, barley, radish, and beet were to exist, then all farmers throughout
the country would have to achieve such a picture: for example, in 2019 10% of all arable
land will be sown with rape, 10% potatoes, 10% wheat, 10% cabbage, 10% sugar beet, 10%
onion, 10% garlic, 10% rye, 10% barley, 10% radish and 10% beet, total 100% of 10 equally
sown cultivations. Each cultivation is in approximately equal amount. In this case, equal
supply is formed on the market. The state plan is not necessary here. Farmers’ initiative and
the combined efforts of analysts are needed. Perhaps, there may be price fluctuations, for
example, fewer people in the Kyrgyz Republic and neighboring states will consume beet.
But in general, all farmers will evenly receive their average profits.
If we wavily sow cultivations and declare some crops popular and fashionable, further we
will continue having the same bullwhip effect.
This requires information exchange, analytical work and informational interaction with all
farmers; an individual work with farmers to create specialized farms complying with the
balance of sown crops. Maybe one of the farmers does not want to be a beet producer, for
example, it is easier for him to plant potatoes. But if the situation dictates him to plant beet
in order not to go broke, he needs to plant beet.
These recommendations, this information interaction, should have been provided by the
Ministry of Agriculture, Food Industry and Land Development of the Kyrgyz Republic. Or,
there should have been an alternative private organization that distributes such information
instead of the ministry. For some reason, this has not yet happened, although, supposedly
there are attempts.
Unfortunately, private information systems are not enough, there are no non-profit
analytical centers and the Ministry of Agriculture currently does not fulfill this function. It is
time to think about it and take steps to create a unified information system for farmers on
cultivation areas and planned cultivation. We need such an interactive map of the country,
which will indicate where and what will be sown. Looking at this map, the farmer must
decide what to sow. Then, the farmer would be able to clearly plan what to sow and
maintain the increased demand for all crops in order to get his profit and avoid bankruptcy.
I would strongly recommend the Ministry of Agriculture, non-governmental organizations,
associations, farmers’ associations, and cooperatives to work on creating such a unified information environment. Combine efforts to create a unified information database, create an interactive map of crops and an interactive map of farmers’ plans. We need special people who will enter this information into this system. We need other special people who will be engaged in analytics and information processing. Third special people are required to remind farmers in all areas to look at this map and plan their sowing for the next years, avoiding such a solution that would lead to a bullwhip effect. Someone should tell farmers to make an equal presence of crops on the market and not to put all eggs in one basket. This should be done either by the Ministry of Agriculture or a private analytical center. Each farmer should equally provide the crop that may be scarce in the following years. If such a system and communication between farmers is created, this kind of problem will be forever forgotten.

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