Shavkat Hasanov,
Department of Agricultural Economics and Marketing, Samarkand Agricultural Institute (University), Uzbekistan

Address: 140103, Mirzo Ulugbek street 77, Samarkand, Uzbekistan
e-mail: shavkat_hasanov@hotmail.com

Agricultural polices enhance of development fruits and vegetables subsector in Uzbekistan

Comment [A1]: I propose the following correct title:

Agricultural polices to enhance the development of fruits and vegetables subsector in Uzbekistan

Abstract

Uzbekistan's fertile land is highly suitable for growing fruit and vegetables, making it one of the main producers among the CIS (Commonwealth of Independent States) countries with ready access to the growing Central Asian and Russian consumer markets. Since its independence, the country implemented a number of agricultural policies- targeted at the development of the agricultural sector, comprising institutional and structural reforms.

The aim of the study is to review the agricultural sector of Uzbekistan with the purpose of identifying the major constraints to the development of the very same with special emphasis on the fruit and vegetables subsectors. In doing this, the objective is to put forward policy recommendations for the development of the sector. Samarkand's fruit and vegetables supply chain potential serves as the key topic of investigation. Although analyzed recent reforms have provided opportunities for liberalization, especially for the fruit and vegetable subsectors – modernization of agriculture per se and of the marketing system in Uzbekistan remain areas requiring continued attention for the overall sectorial development. Policy suggestions for implementation are provided in phases/stages. Specific recommendations were also outlined pertaining to the key constraints identified; namely, pertaining to agricultural production and productivity, quality of land resources, irrigation, reforms, R&D, and agricultural marketing.

Comment [A2]: Not clear

Key words: Agricultural Marketing, Agro-Processing, Fruits and Vegetables, postharvest management, value addition, innovations, Uzbekistan

Introduction

Agriculture plays a vital role for the improvement of rural livelihoods, food security and self-sustenance. Agriculture has traditionally been a strong and relatively stable contributor to Uzbekistan's economy. Between 2000 and 2013, the sector expanded at a robust average annual rate of ~ 7.0%. Despite this growth rate, however, the sector's share in GDP declined from 32% to 17.6% between 1995 and 2015[1]. Other sectors grew in

[1] *StatUz- Base on An Outlook of The State Statistical Committee of Uzbekistan, 2015*

importance for the economy, outpacing agriculture.

Approximately 60 percent of the value of agricultural production comes from the crop sector and the rest is contributed by the livestock sector. Cotton is the most important crop, where Uzbekistan ranks fifth among the 90 cotton-growing countries, contributes approx. 6% of the global cotton production, and is – behind the U.S., the second largest cotton exporter in the world (Djanibekov et al., 2010). Following the independence of Uzbekistan in 1991, cotton production remained linked to the overreaching goal of increasing national export earnings, which were cemented in a cotton procurement policy (Guadagni et al., 2005). Since independence, and because of ***the self-sufficiency food policy*** adopted by the Uzbekistan Government, wheat has become the country's second "strategic crop". It covers approximately 30 percent of the cultivated area, whereas the rest is cultivated with fruit and vegetables (Uzbekistan continues to be one of the major suppliers of fresh and processed fruit and vegetables in the region), potatoes, tobacco and fodder crops.

With regard to food consumption, significant changes have been observed over the years. In the 1990s, the country imported over 82% of the total consumption of grain, 50% of meat and meat products, 60% of dairy products, 50% of potatoes, 100% of sugar and powdered milk and baby food (Kim & Hasanov, 2013). As of today, Uzbekistan has achieved self-sufficiency for almost all basic food products due to the quick progression of domestic production (with the exception of sugar).

Uzbekistan produces a range of high quality agricultural products, from basic commodities such as cotton and wheat to higher value horticultural products such as cherries, pomegranates, and other fruit and vegetables. High quality and a wide range of products, easy access to the growing Central Asian and Russian consumer markets, a vast pool of skilled and inexpensive workforce and a wide set of Government incentives – all boost the attractiveness of this sector.

Agricultural policy in the past more or less evolved around the strategically important crops cotton and wheat, whereas fruit and vegetables received less policy attention. As of recently, agricultural policy in Uzbekistan started putting more weight on the diversification of agricultural production – shifting focus towards high-value agricultural commodities, including fruit and vegetables. The government therefore has recently issued several legislative acts to increase the production of fruit and vegetables throughout the country. All the same, still 30–40% of fruit and vegetables continue to be lost or abandoned after leaving the farm.

Uzbekistan adopted a number of laws to encourage agricultural growth and rural development. These include the Resolution on "the forecasting parameters of production and use of fruit and vegetables, potatoes, melons and grapes in 2011" (Lex.uz, 2011), the Decree "On measures for deepening economic reforms in fruit and vegetables production and viniculture (2006), the Decree "On additional measures on stimulating the attraction of direct foreign investments" (2005), a resolution "On additional measures on deepening processing of raw agriculture products, increasing volume of production and expanding assortment of food products for 2012-2015" etc.

The processing sector in Uzbekistan, however, is faced with different challenges. Most fruit and vegetable producers are small scaled and have low levels of mechanization; the distribution chain is developing, but still needs substantial investment; and quality standards are not uniform across products and producers. Moreover, much of the country's agricultural output goes unprocessed. In season, a lack of adequate packaging and storage facilities causes

Comment [A3]: It is better to use %

Comment [A4]: Should be "food self-sufficiency policy"

Comment [A5]: Should be %

Comment [A6]: What about % of land used for cotton cultivation?

Comment [A7]: Should be "progress"

Comment [A8]: Should be "strategic commodities", since cotton is not a basic commodity.

Comment [A9]: Should be "farm gate".

Comment [A10]: It would be interesting for the international reader to see a policy chronicle of these laws in form of a table.
If possible please include a table with the following columns:
1.Year of law issue
2.Full name of the law
3.Main focus and direction of the law

Comment [A11]: Should be in "harvest seasons"

a large volume of products to directly release onto the market, creating surplus that triggers price declines. In the off-season, commodities such as apples are imported from China and Iran, with significantly higher prices versus domestic –produce during the season.

The establishment of an agro-food cluster serves to ensure that sustainable agricultural development is realized and marketing systems are developed. The core principles underlying the clustering concept are networking and creation of value-added products based on R&D. A paradigm shift from processing intensive production systems by individual enterprises targeting domestic markets to value-adding production. Networks of processing aimed producers focusing on export-promotion, benefit from the implementation of clustering as it contributes to enhancing the competitiveness of Uzbekistan's agricultural and agro-food sector. Thereby, clustering ultimately helps to achieve sustainable growth of the agricultural industry and improves livelihoods in rural Uzbekistan.

The aim of the study is to review the agricultural sector of Uzbekistan with the purpose of identifying the major constraints to the development of the very same with special emphasis on the fruit and vegetables subsectors. In doing this, the objective is to put forward policy recommendations for the development of the sector.

Data and methodology

The candidate regions for the clustering of agro-food processing special zones are Tashkent, Andijan and Samarkand. Selection was done on the basis of the *Potential Clustering Coefficient of Agro-Processing by Region* and the *Comparative Advantage* in terms of production and processing. A coefficient of potential of clustering (CC) is calculated using the following formula (Romanov and Arushakov, 2008):

$$CC = Cp * Cs * Cproc * Cpcp$$

Essence of the method estimates the potential of clustering is to calculate:

Cp – (coefficient of production): define as the volume of production in the region divided to the volume of production average in the country;

Cs – (coefficient of specialization): refers as the regions share in total production certain type of product divided to the regions share in the total volume of gross agricultural production in the country;

Cproc - (coefficient of development of processing industry): define as available capacity to process products in the region divided to available processing capacity in the regional average;

Cpcp – (coefficient of per capita production): share of production in the region in the total production in the country divided to share of region's population in the total population in the country.

Results of calculations by regions most great potential clustering in fruit and vegetable complex have Samarkand, Tashkent region, and all region of Fergana valley (Andijan, Namangan, and Fergana). The main activity of the clusters will be the production, processing and marketing of fruit and vegetables.

Out of three regions with high potential for production and processing of fruits and vegetables selected as target areas for clustering. In subsequent selection criteria using coefficients of clustering potential Samarkand province was selected for the pilot project funding by Korean government's KSP(Knowledge Sharing Program) project "Development

Comment [A12]: Here a short description of a seasonal price volatility of fresh fruits and vegetables can be adopted from the following publication:

Mori-Clement Y., Bhaduri, A. and N. Djanibekov (2014): Food price fluctuations in Uzbekistan: Evidence from local markets in 2002-2010. In: Lamers, J.P.A., Khamzina, A., Rudenko, I., Vlek, P.L.G. (Eds.) Restructuring Land Allocation, Water Use and Agricultural Value Chains: Technologies, Policies and Practices for the Lower Amudarya Region. V&R unipress, Bonn University Press, Goettingen, pp. 275-294.

Comment [A13]: Abbreviation should be explained when it appears first time.

Comment [A14]: Not clear

Comment [A15]: As a final paragraph of introduction, I recommend to put the aim and objective of the paper as they are presented in the abstract.

Comment [A16]: It is recommendable to transfer the equation into MS Word equation format.

Comment [A17]: I recommend to include a paragraph here which describes the used database and its sources.

of Agro-Processing Industry in UZ: Korea's Experience and Knowledge Sharing".

The main potential cluster areas in the Samarkand region are the eastern districts, such as Bulungur, Urgut, Taylak, Jambay, Akdarya and Samarkand County, which are non-cotton cultivated areas. These candidate districts have high density and share in gross regional product in the region. However, Urgut district is producing roughly 80 % of the total tobacco production in Uzbekistan, with most of the irrigated land covered by tobacco and wheat. Only in higher mountain areas of the district are household farms producing fruits like table and dried grapes, nuts, etc. Therefore, this district dropped from the candidates list. The remaining districts were eligible candidates for cluster in the region, based on population density, surplus of labor forces working for processing companies, shares in regional gross product, conducive land and provision of adequate water.

To determine which district would be more suitable for agro-processing cluster piloting, a further study conducted to assess the potential of each of these districts to select candidate areas for clustering. Accordingly, Bulungur and Jambay districts selected as pilot for implementation of agro-based clustering for tomato and apple respectively. SWOT analysis also conducted for each district for analyses their potentials of growing fruits and vegetables.

Results

The SWOT analysis of selected two districts shows that the current tomato supply chain not stabile in Bulungur district, and therefore farmers, households and agro-processors can get benefit from participating in Agro-clusters. The state encourages cluster-based policies to support agricultural units. Clusters have seen as being particularly beneficial for this group, as it allows them to achieve scale economies and share costs related to training, info sharing, and certification and technology application.

The main problem of tomato production in Bulungur district are related to post-harvest activities, as about 25-33% of commodities are lost during post-harvest season. Problems of transportation, unstable contracts between growers and processors and lack of storage houses in rural areas have worsened the postharvest losses. Lack of postharvest research and development programs aimed at generating appropriate postharvest technologies in Bulungur district is also in serious shortage.

Tomato is selling in market in fresh form, after collection from the fields, local farmers and household farmers supply domestic markets directly to retailers in Bulungur and Samarkand city. The marketing infrastructure in the district is underdeveloped, where centralized grading, packing, transit storage facilities, transportation and bulk storage facilities are greatly lacking.

Although most farmers and household farmers in Bulungur district have enough knowledge in growing tomatoes, in most cases, they do not consider the consumer's need for the different varieties of tomatoes. Hence, enhancing the entrepreneurial skills of farmers is necessary. On-farm sorting, pre-cooling, packing and storage facilities for tomatoes are essentially required for distant/export marketing.

A second district Jambay is selected as a pilot for agro-processing cluster of apple. There is favorable climatic condition for growing orchards, especially for apple in the district. The district has also several manufacturing companies, including several companies engaged in food processing. There is also a relatively large number of skilled-labor, with rich experience in growing apples. The government has issued state program that led to abandoning of cotton cultivation in the district and encouraged production of fruits and vegetables. The intensive gardening of apple is a government initiative as part of nation-wide program for establishing

Comment [A18]: I recommend to add the SWOT table directly into the Results since much of the presented text seems to originate from this table.

Comment [A19]: The definition of "Agro-clusters" should be provided in introduction since international readers might be unfamiliar with this term.

Comment [A20]: Should be "facilities".

intensive orchards.

There is a need to ensure the production of adequate volume and stability of apple production in the district. In particular, government should facilitate smallholders have to integrated in the supply chain of apple in the district. Currently, the share of smallholders in the total production of apple in the district is very low. There is relatively sufficient infrastructure, especially storage facilities. However, these facilities are largely underutilized. Smallholders could make benefit by getting the storage facilities, in addition, contract farming arrangements could be implemented between the smallholders and the large producing companies or the owners of the intensive gardens.

As indicated above, 12-15% of apple produced in the district faces postharvest losses, where similar to the situation in Bulungur, there is critical shortage of postharvest technology due to lack of sufficient R&D in producing appropriate postharvest techniques. Although postharvest loss in the case of apple is relatively lower than that of tomatoes in Bulungur, the estimated loss is still significant and calls for similar actions as for tomatoes. In addition, the R&D programs needs to implement at national level should also consider apple in terms of establishing appropriate postharvest technologies.

The increased emphasis on intensive gardening in the case of apple provides an opportunity for economies of scale advantage in availing services of quality control and assurance centrally. Contract farming arrangements needs also strengthening between smallholder growers and the bigger producers.

Apple produced by smallholders in the district are mainly delivering in fresh form to domestic markets in Samarkand city through retailers. Some low quality apple mostly produced by household farms are uses as fodder for livestock. The apple harvested from those plantations during on-season are mainly stored for sale during off-season in fresh form, while small portion of the harvest considered low quality for fresh sale undergoes some level of processing before sale. However, the production of apple from recently initiated intensive gardens is not yet in the stage of mass harvesting, and hence there is no definitive scheme identified with regard to the description of its marketing.

Since there is lack of a network of local markets, and poor access to market information, should be establish a National/Regional information networking systems. There is also a need to develop marketing centers at different levels to fill the existing gap in market infrastructure. A last but not least, forging strategic alliances with multinational companies and corporations would enhance the marketability of apple both domestically and internationally.

Discussions

Ensuring of stable supply of vegetables and fruits requires a long-term approach to processing and distribution rather than a short-term perspective aimed at only increasing production. In particular, strengthening a stable production system coupled with capacity building of farmers is important for smooth implementation of agro-processing cluster. Stability of production does not only entail stability of quantity, but attention should also have to pay to ensuring stability of quality of the products. In particular, quality standards are maintaining for food safety, security and international trade.

An enhance of value-addition in the subsector and expansion of market access could be achieved through such interventions as: promoting commercialization of production, identifying potential markets, promoting private sector participation in agro-processing and value addition, ensuring quality standards, promoting joint-marketing and distribution

Comment [A21]: I recommend to include the following report into the discussion:

Larson, D.F., Khidirov, D. and I Ramniceanu (2015) Uzbekistan Strengthening the Horticulture Value Chain. Uzbekistan Vision 2030 Background Paper Series , Washington, DC ; World Bank Group. http://documents.worldbank.org/curated/en/2015/01/24003407/uzbekistan-strengthening-horticulture-value-chain

channels, adopting new varieties and production technologies, adopting efficient processing methods, developing high quality processed food for export markets, supporting processed food, expanding R&D in processing, establishing specialized research institutes and realizing geographical advantages with better understanding of the characteristics of export markets.

Ensuring food safety and quality requires implementation measures of quality standards such as GAP (Good Agricultural Practices), GMP (Good Manufacturing Practices), HACCP (Hazard Analysis and Critical Control Point). In addition, provision of appropriate food safety and quality laboratories, along with trained scientists are crucial. Other interventions that need to be implemented includes: creating explicit standards covering domestic and international markets with appropriate inspection capabilities; training all horticulture value-chain participants; ensuring relevant and genuine supply of government-approved seed varieties.

Human resource development is required at all levels, where education and training of scientists, processors, extension agents, farmers, industrialists and marketing agents is also required. All human resource programs should consist of long- and short-term activities. Promoting attitude of self-help, cooperation and hard work among farmers and bringing about changes in mental reform is also very important. Provision of extension services and training in postharvest treatment and management to farmers, processors, researchers and government staffs from relevant ministries working in fruits and vegetables subsector is also beneficial.

This calls for concerted effort in availing key infrastructural services that includes investment in construction of infrastructure for postharvest handling, logistics, and marketing; production of cold chain infrastructure (refrigerated transport, cold rooms, low temperature sale stands) the cold chain; expansion of better roads, transportation, communication, and reliable electricity.

References

1. **Cornia, G.A., McKinley, T., Spoor, M., Kotz, D.M., Saidova, G., Nasritdinkhodjaev, Z., Khaitov, A., Abduganieva, Y., and A. Tukhanov (2011)**. Growth and Poverty Reduction in Uzbekistan in the Next Decade. A Report Commissioned by the Poverty Group
2. **Djanibekov, N., Rudenko, I., Lamers, J.P.A., Bobojonov, I.(2010).** Pros and cons of cotton production in Uzbekistan, in P. Pinstrup-Andersen and F. Cheng, eds., Food Policy for Developing Countries: Food Production and Supply Policies, Cornell University Press, Ithaca.
3. **Government of Japan (2006)**. Country Assistance Program for the Republic of Uzbekistan
4. **Guadagni M., Raiser, M., Crole-Rees, A., Khidirov, D., (2005)**. Cotton taxation in Uzbekistan: Opportunities for reform. ECSSD Working Paper No 41. Europe and Central Asia Region, World Bank, Washington DC.
5. **Hasanov Sh. and Ahmed, M. N., (2011)**. Agricultural efficiency under resource scarcity in Uzbekistan: A data envelopment analysis. Business and Economic Horizons. Vol.4, No.11.
6. **Kim K.R., Hasanov Sh.(2013)** Development of Agriculture and Marketing Structure in Uzbekistan for Agro- Processing of Fruits and Vegetables. Journal of Agricultural, Life and Environmental Sciences, 1-9, pp, Vol.25, No.2, July, 2013

7. **LEX.uz –**An online national database of legislative acts of Republic of Uzbekistan
8. **Romanov, A. Arushakov V.(2008)** Formirovanie agropromishlennix klasterov v Rossii //APK –economika i upravlenie. № 3, p. 41-45(in Russian).
9. **StatUz**- An Outlook of The State Statistical Committee of Uzbekistan, 2015
10. **World Bank (2010)**. Opportunities and Challenges for a Converging Agenda: Country Examples