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Innovative development of Uzbekistan agroindustrial complex

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***Abstract*—Uzbekistan possesses high potential for production increase of environmentally safe horticultural and livestock products, population supply with them, their promotion to the world markets. By the strategy of actions in five priority directions of the Republic of Uzbekistan development in 2017-2021 the significant attention was paid to modernization and intensive development of agriculture and processing industry of the country, their innovative development. They are directed at the agrarian sector development, food security of the country strengthening, export potential increase and population standards of living rising. Special attention is paid to cultivated areas optimization, expansion of food acreage, intensive gardening development, reclamation, livestock breeding, deep conversion and storage of agricultural products. Work on these directions is carried out and has already yielded positive results. At the same time, there are definite weaknesses in the agroindustrial complex of the republic: low initiative of employees of industry management bodies, especially middle ranking, low motivation of ordinary workers, rural population labor, low level of labor mechanization, predomination of hard physical and monotonous tasks at agricultural and processing enterprises. This requires persistent work on all measures fulfillment provided by the strategy. In addition, measures for informatization, digitalization of the complex enterprises, integrated mechanization, automation, and robotization of hard and harmful work for humans are required. Successful implementation of action strategy in all provided directions requires significant investments, both domestic and outward, from International Financial Institutions.**

Keywords—agriculture, processing enterprises, innovative development, intensive gardens, food security, agricultural development.

I. Introduction

Agriculture is the most important sector of Uzbekistan. This sector together with population demands satisfaction in food, and processing enterprises in raw materials, is one of the most promising sources of the country economic potential strengthening. In "The strategy of actions in five priority directions of the Republic of Uzbekistan development in 2017-2021" approved by Decree of the President of the Republic of Uzbekistan from February 7, 2017, No. UP-4947, significant attention is paid to modernization and intensive development of agriculture and processing industry, their innovative development.[1]

II. Purpose and Research Technique

The purpose of this study is consideration of priority guidelines of Uzbekistan agroindustrial complex innovative development.

Research techniques consist in generalization of experience on new agricultural technologies implementation with the aim of production volume increase of export-oriented fruit and vegetables products, being in demand in the world markets, agroindustrial complex innovative development directions finding of the country..

III. Research Results

Further structural reforms and dynamic development of agricultural industry and processing industry, further strengthening of the country's food security, increase of its export potential are the most crucial tasks designated for implementation in the republic.

Thus, in 2016-2020 cultivated areas optimization, areas expansion for potato by 36,0 thousand hectares, vegetables – by 91,0 thousand hectares, intensive gardens – by 18,0 thousand hectares, oil crops – by 14,0 thousand hectares, vineyards – by 11,2 thousand hectares due to reduction by 170,5 thousand hectares of lands for cotton plants and by 50,0 thousand hectaresfor grain crops were anticipated. This will produce economic effect, increase population employment.[2]

In addition, advanced agricultural technologies of crops conversion, high-performance agricultural equipment, modern methods of irrigation application is provided. This will allow increasing cotton yields from 26,1 to 26,9 dt/hectare (+0,8), cereal crops – from 54,9 to 66,4 dt/hectare (+11,5), potato – from 218,9 to 230,5 dt/hectare (+11,6), vegetables – from 277,1 to 294,0 dt/hectare (+16,9), fruit – from 123,9 to 140,4 dt/hectare (+16,5), grapes – from 126,7 to 137,1 dt/hectare (+10,4).[3]

These measures implementation will provide a significant growth of agricultural products production volumes in the country. Thus, from 2016 to 2020 the production volume of grain crops will increase by 1195,0 thousand tons, potato – by 931,0 thousand tons, vegetables – by 3 002,2 thousand tons, fruit – by 648,6 thousand tons and grapes – by 273,9 thousand tons.

The most important direction of innovation activity is intensive gardens and vineyards development using high-yielding trees, dwarf and semidfarf trees planting based on modern agricultural technologies.[4] Thus, only in 2011-2016 based on the new agricultural technologies application in horticulture 31 308 hectares of high-yielding dwarf and semidfarf intensive gardens were created.

The following steps carrying out in this direction at the expense of farm enterprises means and the loans for the total amount of 532 346,0 million taken by them is defined by the Strategy of actions:

- Creation of new intensive gardens over the area of 13 thousand hectares and vineyards – over the area of 7,3 thousand hectares, and reconstruction of 15,4 thousand hectares of gardens and 9 thousand hectares of vineyards;
- Gradual transition of existing lowly profitable gardens and vineyards (by 10% or 14,1 thousand hectares a year) to intensive methods, due to which their share increase by 2020 will be up to 30%;
- Staged implementation of drip irrigation system into newly-created and existing intensive gardens and vineyards, by 5,7 thousand hectare a year;
- Increase of at least 7 million of young plants and rootstocks number of dwarf and semi-dwarf trees, adapted to edaphoclimatic conditions of the republic;
- Young plants testing of appreciable and commercially successful at the world markets export-oriented fruit trees varieties for intensive gardens, their inclusion into the State Register of crops recommended for planting at the territory of the republic and others.

Seeds selection and crops variety selection is of great importance for crops yield enhancement. During the years of independence the country's scientists carried out large-scale studies on creation of new varieties of fruit, berry, nut, citrus plants and grapes, on study of local and introduced varieties, development and adoption of technologies of their cultivation. As a result of that for the first time in Central Asia selection of seed, stone fruit, berry, nut crops was adjusted by means of selection. Due to multi-year research more than 170 varieties of fruit and grapes were developed, about 80 of them were included into the State Register. By now 709 varieties of fruit, vegetables, potato and gourds have been included into the State Register, 189 of them are local varieties, 520 are introduced. [4]

Measures on the following were defined on this direction by the strategy of actions for 2017-2021:

- Research work expansion on development of crop varieties, possessing resistance to edaphoclimatic conditions of the republic, dry periods, heat and diceases;
- Development of early-ripening and high-yielding varieties of crops, adapted to different edaphoclimatic conditions;
- Evidence of negative impact of genetically modified products on consumers' health.

Modernization and intensification of livestock industry development are of great importance. By the Decree of the President of the Republic of Uzbekistan from December 29, 2015 № PP-2460 "On measures for further reforming and agriculture development for 2016-2020" the aims for increase of cattle population by 3 165 thousand heads, sheep and goats by 4 281 thousand heads, and birds by 31 200 thousand heads were defined. As a result of that meat production output (in live weight) should increase by 519,0 thousand tons, milk by 4 177,0 thousand tons, fish by 90,0 thousand tons, honey by 13,7 thousand tons and eggs by 4 100,0 million pieces.[2]

Considerable attention is paid to import of breeding cattle from the countries with developed livestock breeding for its further breeding.[5] So, only in 2006-2016, 69 175 heads of breeding cattle were imported from Ukraine, Belorussia, Poland, Austria, Germany, Holland and other countries (Fig. 1).

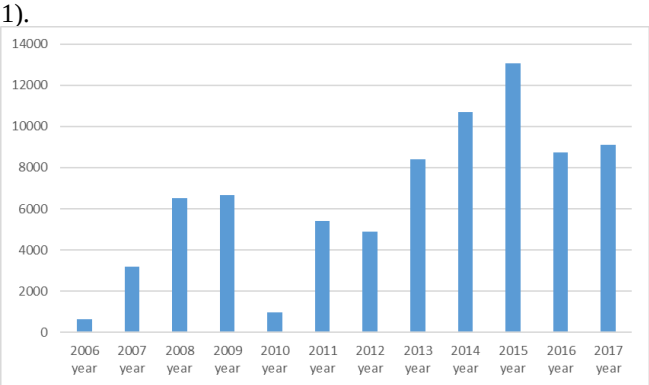

Fig. 1. Heads number of breeding cattle imported to Uzbekistan

For the purposes of breed improvement and livestock yield increase zooveterinary stations work in the republic, population is provided with corresponding services. The number of cattle breeding farms has been raised to 610, they prepared and sold 7677 heads of breeding cattle to population and farms by means of auctions. It is planned to establish 1533 new cattle breeding farms by 2020 (Fig.2).

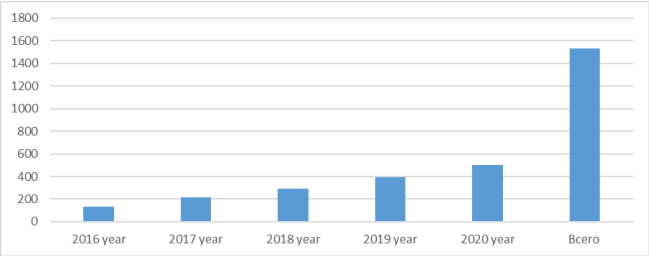

Fig. 2. Uzbekistan Establishment of cattle breeding farms in the republic in 2016-2020

At present food security remains one of the global problems in the world. According to UNO statistics, 30% of the world's population suffers from malnutrition.[6] In Uzbekistan in recent years significant results in food security provision of the country have been achieved. Thus, if in 1990 consumption of all types of food products per head of population was less than the norm, by 2017 meat consumption volume constituted 105,4% of the norm, dairy products – 194,9%, potato – 104,4 %, vegetables and gourds – 221,3%.

The following measures are defined by the Strategy of actions with the aim of agricultural products production

volumes increase, prevention of sharp rise in prices for them at the domestic market:

- Production increase of vegetables by 105,7%, potatoes by 106,3%, gourds by 106,1%, fruit by 106,0%, grapes by 105,7%, meat by 105,6%, milk by 108,1%, eggs 111,3%, fish by 120,0% and honey by 118,2%;
- Creation of 503 greenhouse facilities on 394 hectares of areas, 6885 individual household plots of population on 176 hectares of areas;
- Creation in household plots of population and Dehqan farms of greenhouses with light construction, small poultry, fish, beekeeping farms, using alternative sources of energy, hands-on assistance rendering in production of highly-productive and highly remunerative products;
- Distribution of modern technologies for effective and rational use of individual household plots, production of high yield;
- For the purpose of fresh fruits and conversed products storage and shipping for export, construction of 184 refrigerated warehouses with total capacity of 132,2 thousand tons of products, modernization of 4 refrigerated warehouses for 1,4 thousand tons of products, bringing the total capacity of refrigerated warehouses up to 632 thousand tons of products. Creation of 1000 jobs due to that;
- Improving soil fertility and crop yields through transition to planning for long-term arrangement of crops, application of combined order of planting.[7]

An important factor of agriculture stable functioning is development of multiproduct farms. They should be engaged not only in growing products, but its advanced conversion and different services rendering to population. It will help to strengthen their financial condition and solvency, increase competitiveness. Programs on farms development are executed in the republic.[8]

In recent years tests have been carried out in a number of regions and new technologies of crops irrigation were recommended for application. According to corresponding state program in the Republic of Uzbekistan in 2013-2017 modern methods of land irrigation on 104 600 hectares were implemented. According to the data from the Ministry of Agriculture and Water Management of Uzbekistan, drip irrigation technologies of cultivated land for 47356,0 hectares, irrigation of cultivation beds under polyethylene film for 19214,0 hectares, irrigation with the help of movable flexible pipes for 18418,0 hectares were implemented in the republic (Fig. 3).

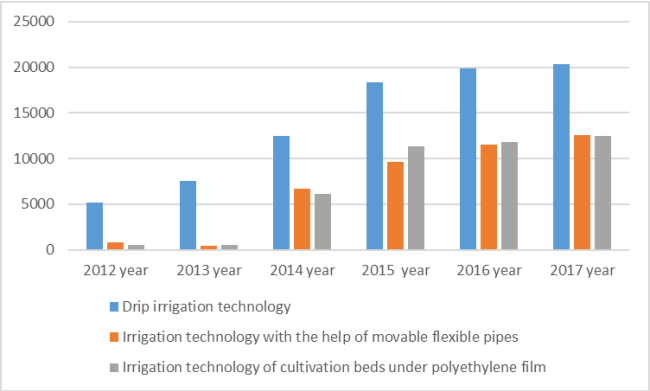

Fig. 3. Planted areas of the republic where modern irrigation methods were implemented, in hectares

Resolution of the President of the Republic of Uzbekistan of March 5, 2016 No. PP-2505 “About measures for further development of source of raw materials, deepening of conversion of fruit and vegetable and meat and dairy products, increase in production and export of provisions in 2016-2020” provides for 180 investment projects on deep conversion of agricultural products with a total value of 595 886,3 thousand dollars carrying out. (Table 1)

TABLE I. INVESTMENT PROJECTS FOR CONSTRUCTION, RECONSTRUCTION AND MODERNIZATION OF DEEP CONVERSION OF AGRICULTURAL PRODUCTS FACILITIES UNTIL 2020 AND THEIR FINANCING, IN THOUSAND DOLLARS

Projects name	**Projects cost**	**Including by sources of financing:**		
		Internal funds	***Banks loans***	***Foreign investments and loans***
Total (180 projects)	595 886,3	242 916,7	189 461,6	163 508,0
including				
New construction (141 projects)	463 267,3	169 714,7	144 324,6	149 228,0
Reconstruction and modernization (39 projects)	132 619,0	73 202,0	45 137,0	14 280,0

This resolution provides for 138 enterprises of fruit and vegetables conversion with output of 99 100 tons, 46 enterprises of meat products conversion with output of 16 500 tons, 79 enterprises of dairy products conversion with output of 34 850 tons, and 153 enterprises of other food products conversion with capacity of 26 840 tons commissioning in 2016-2020. [2]

As a result of system measures implementation on deep conversion of agricultural products the possibility to increase production volumes of fruit and vegetables preserves in 2020 in comparison with 2016 by 79,4%, fruit juices – by 80,5%, dried fruits – by 73,1%, meat and meat products – by 59,5%, sausage products – by 68,8%, milk and dairy products – by 56,6%, butter – by 51,4%, confectionary products – by 59,9%, vegetable oil – by 57,2%, sugar – by 24,0%, cheese – in 2,5 times, canned meat – in 2,4 times, fish products – in 3,4 times, frozen fish – in 2,8 times will arise.

The Strategy of actions provides for application of funds from international financial institutions for agriculture and processing industry development for the total amount of 337,8 million dollars, namely:

- Funds of “Asian Development Bank” in the amount of 15,0 million dollars for the project “Modernization of production in agriculture”;
- Funds of “International Bank for Reconstruction and Development” in the amount of 150,0 million dollars for the project “Development of livestock sector”;[7]
- Funds of “International fund for Agricultural Development” in the amount of 23,8 million dollars for the project “Expansion of production and dairy products conversion development in Kashkadarya and Jizzakh Regions”;
- Funds of “International Development Association” in the amount of 14,0 million dollars for the project “Adaptation and migration of climate change in the Aral Region”.

In addition, there are definite weaknesses in agro-industrial complex of the republic. They are low initiative of employees of industry management bodies, especially middle ranking, low motivation of ordinary workers, low level of labor mechanization, predomination of hard physical and monotonous tasks.[10]

IV. Conclusions and recommendations

Uzbekistan possesses high potential for production increase of environmentally safe horticultural and livestock products, their promotion to the world markets. By the strategy of actions in five priority directions of the Republic of Uzbekistan development in 2017-2021 the measures on intensive development and modernization of agriculture and processing industry of the country, their innovative development were defined. They are directed at the agrarian sector development, food security of the country strengthening, export potential increase and population standards of living rising.

This requires persistent work on all measures fulfillment provided by the strategy. In addition, informatization, digitalization of these industries, mechanization, automation, and robotization of hard and harmful work for humans are required. [6]

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