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CREATION AND IMPLEMENTATION OF HIGHLY EFFICIENT GREENHOUSE COMPLEX INVOLVING DIGITAL TECHNOLOGIES IN KAZAKHSTAN

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Kazakhstan has always been the centre of the agro-industrial sector among CIS countries. Up-to-date techniques and methods are being implemented to develop agriculture in our country, and the importance of involving digital technologies is growing. According to the state program for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021 proposed by the President of Kazakhstan (RK) on March 19, 2010, the agro-industrial sector has convenient conditions and prospects for further development[1]. Today, to develop one needs to keep up with the times, that is, apply digital technologies. Therefore, the topic chosen for my report is “Creation and implementation of a highly efficient greenhouse complex involving digital technologies in Kazakhstan”.

Why is this topic relevant? Kazakhstan needs a high-performance agro-industry. Productivity in our country is low due to several reasons:

- Adverse changes in natural and climatic conditions
- Long payback period
- A lot of costs

To solve these problems the modernized and effective approach and the necessary budget are required. The purpose of this report is to inform that the current methods of growing plants in traditional greenhouse complexes are ineffective and require high costs and to provide a way out of this situation.

What prompted me to choose this particular topic? The project of Kimbal Musk called "Square Roots" consists of the use of vertical farms in urban areas. “Square roots” farms are more environmentally friendly than conventional greenhouses and require less resources. In addition, this company immediately delivers its harvest to local stores, revealing organic agriculture which is highly demanded in today’s market [2]. The experience of this project and its effectiveness could serve as a great example for us.

The new greenhouse complexes consist of ordinary 40-ton containers optimized for comfortable conditions for a certain type of plant. Upgraded containers outperform conventional greenhouses in the ways that they do not take up much space, are cheaper and do not need daily human control. Modernized containers will be monitored using computers and sensors that allow a farmer to

diagnose for changes in temperature, soil humidity, soil content, and even the concentration of nutrients needed for the plants. This would result in perfect conditions for the crops and maintaining those conditions throughout the year would enable harvesting even during winter. Automatization and relying on IT databases are the key in achieving high yields, eliminating adverse effects of climate and weather conditions, improving the process of monitoring the crops.

In conclusion, implementing such greenhouses on a republic scale would allow our country to increase the yield of crops, thus improving exporting goods and leading to a larger contribution of the agricultural sector in GDP. Focusing this technique on the main crops that are produced by Kazakhstan, i.e. grain would enhance the economy of our country. And growing basic vegetables that are demanded among our people, we would be less dependent on foreign products, lowering import scopes.

References

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