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## Exploiting Seasonal Varieties of Tomato Cultivation for Enhanced Yield and Nutritional Impact in Uzbekistan

*Memanfaatkan Varietas Musiman Budidaya Tomat untuk Meningkatkan Hasil dan Dampak Gizi di Uzbekistan*

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### Abstract

This comprehensive study investigates the varied seasonal tomato cultivars of Uzbekistan, characterizing their cultivation practices and vegetative periods. Given tomatoes' notable dietary value, a detailed examination of more than 1,000 different varieties was conducted, drawing attention to their growth in both open and protected environments. Leveraging global agricultural data, with a specific focus on leading tomato producers like China, USA, India, Turkey, and Egypt, we've honed in on the cultivation practices in Uzbekistan, where tomatoes comprise a significant 40-45% of total vegetable crops. Our results indicate that in 2010, tomatoes were cultivated on 75,000 hectares in Uzbekistan with a distribution pattern indicating 70% for processing, 10-15% for local market sale, and 15-20% for export. These findings offer the potential to boost both the local economy and the nutritional intake of the population, underlining the importance of tomatoes as a key dietary staple with implications for broader agricultural policy, particularly in areas focused on health and economic development.

Highlights:

- Uzbekistan dedicates 40-45% of its total vegetable crop area to tomato cultivation, reflecting its substantial dietary and economic value.
- Diverse tomato varieties, suited to both open and protected growth, are integral to achieving high yield and ensuring local to global supply chains.
- The distribution of tomato produce in Uzbekistan offers potential for economic growth and improved local nutritional intake, with 70% processed, 10-15% sold locally, and 15-20% exported.

Keywords: Tomato Cultivation, Seasonal Varieties, Uzbekistan Agriculture, Dietary Impact, Global Tomato Production

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## Introduction

Tomatoes, originally hailing from Ecuador and Peru in South America, hold a significant place in the agricultural landscape of Uzbekistan, where they account for more than 40% of the total vegetable cultivation area [1]. As the predominant vegetable crop, tomatoes are grown in excess of 200,000 hectares, with 45.8% of vegetable cultivation zones allocated specifically for tomatoes. The average yield stands at 24 tons per hectare, demonstrating the viability and productivity of this crop [2]. In fact, tomatoes grown in greenhouses represent a leading export agricultural product, emphasizing their economic importance. The biological characteristics of the tomato plant contribute to its widespread cultivation.

The root system of a tomato is impressively branched, capable of penetrating up to 150 cm into the soil, and extending in diameter from 1.5 to 2.5 meters. Moreover, the tomato's stem can either grow upright or lay down, with varying degrees of branching and lengths ranging from 30 cm to 2-3 meters, contingent on the stem type [3]. If sufficient moisture is present, roots can appear from all parts of the stem, allowing for propagation through seeds or vegetatively. Regarding the structure of the stem and leaves, tomatoes are categorically divided into three types: stemmed, stemless, and potato-leaved. Stemmed tomatoes have thick, minimally branched stems that can bear the weight of the fruit; stemless tomatoes, in contrast, have thin, highly branched stems and the fruit sags under its own weight; potato-leaved tomatoes exhibit large leaves [4].

## Discussion

Further, based on the pattern of growth and flowering, tomato stems are classified into determinant types (where both the main stem and side branches grow moderately and end with the formation of flowers) and indeterminate types (where the main stem grows vigorously and the side branches can extend up to 2-3 meters when pruned) [5]. Open fields are typically used for determinant varieties, while indeterminate varieties are generally grown in greenhouses. Flowering in tomatoes is an intriguing process, with bisexual, small, yellow flowers typically having 5-7 petals and a cone-shaped structure housing 5-6 pinnae [6]. An interesting characteristic in most cultivars is the positioning of the gynoecium within the cone of stamens, leading to approximately 95% self-pollination of the tomato crop [7].

However, under certain circumstances like unfavorable weather conditions or specific cultivar traits, the gynoecium may be situated higher than the stamens, facilitating cross-pollination via insects or wind. Fruits may be two-, three-, or multi-chambered, with weights ranging from 50 to 1000 grams and colors spanning red, pink, yellow, purple, white, and even black [8]. Given that tomatoes are thermophilic, they thrive best in temperatures of 20-25 °C and relative humidity of 40-65%. Temperature fluctuations beyond this range can lead to significant growth impairments. Furthermore, tomatoes are heliophilous and hence, their growth is detrimentally affected when cultivated in the shade [9].

Tomato cultivation features an array of unique and versatile varieties, with several of these species originating from Uzbekistan [10]. Varieties such as "Kind of Friendship," "Surkhan-142," "Uzbekistan Variety," and "Sample-70 Navi" present distinct characteristics in terms of growth periods, bush types, fruit shapes, sizes, weights, and productivity levels [11][12]. This rich diversity caters to a broad spectrum of culinary applications and environmental conditions, contributing to the adaptability of tomato cultivation [13].

The "Kind of Friendship" is an early variety, with a growth period spanning 95 to 100 days. This type features a determinate, stemmed bush with potato-like leaves and yields round, dark red fruits that are smooth and firm, each weighing approximately 80 to 90 grams. This variety is renowned for its high productivity, reaching an impressive 40 to 45 tons per hectare [14]. Originating in Uzbekistan and registered in 2009, it is recommended for planting across the country and yields a bountiful harvest in temporary film-covered and open fields [15].

"Surkhan-142," on the other hand, is a medium variety with a growth period of 110 to 115 days. It boasts a semi-determinate, upright-growing bush, potato-like leaves, and yields flat-round and rounded fruits, each weighing 120 to 140 grams [16][17]. The productivity of this variety is a notable 55 to 60 tons per hectare, and it is suitable for both consumption and processing [18][19]. A product of Uzbekistan and Russia, this variety was registered in 1994 and is recommended for planting in the Bukhara, Surkhondary, and Tashkent regions [20].

Another medium variety is the "Uzbekistan Variety," which has a growth period of 120 to 125 days [21]. Its bush is a determinant type, compact, and single-leaved, producing round, medium fruits with smooth surfaces, each weighing between 120 to 160 grams [22]. The productivity of this variety is relatively high at 65 to 70 tons per hectare [23]. This heat-resistant variety originated in Uzbekistan, was registered in 1985, and is recommended for planting in the Republic of Karakalpakstan, Andijan, and Bukhara regions [24].

Therefore, the "Sample-70 Navi" is a Chechpishar variety, with a growth period of 110 to 115 days [25]. The bush is determinate, with moderate branching, producing round fruits with flat, red surfaces, each weighing between 110 to 130 grams [26]. Its productivity level is approximately 53 to 55 tons per hectare. However, it is not



recommended for planting in nematode-infested lands. A joint creation of Uzbekistan and Russia, this variety was registered in 1992 and is recommended for planting in the Surkhandarya region.

## Conclusion

Due to its nutritional value, tomato production is one of the most widely grown vegetable crops. Over 1,000 tomato types are grown in fields and greenhouses. Tomatoes were grown on 4.4 million hectares worldwide in 2009, yielding 153 million tons of produce. China leads global production at 45.4 million tons, followed by the USA at 14.14 million tons, India at 11.15 million tons, Turkey at 10.7 million tons, and Egypt at 10.0 million tons. Uzbekistan grows 40-45% of its vegetables as tomatoes. Tomato cultivation covered about 75,000 hectares in 2010. Processed (70%), local (10-15%), or exported (15-20%) food was used. The above observations demonstrate tomatoes' worldwide and national agricultural relevance, requiring further research to understand and improve their cultivation methods, crop production, and export-ability. The above could lead to economic benefits, improved diets, and promising biotechnological implementations.

## References

1. P. M. Khaitovna and M. S. Faksriddinovich, "Technology of growing cauliflower," *Texas J. Interdisciplinary Res.*, vol. 6, pp. 8-10, 2022.
2. P. M. Xayitovna and M. S. Faxriddinovich, "Cauliflower growing technology," *Texas J. Multidisciplinary Stud.*, vol. 6, pp. 8-10, 2022.
3. P. M. Xayitovna and M. S. Faxriddinovich, "Types of corn grown in Uzbekistan and their peculiarities," *Texas J. Agric. Biol. Sci.*, vol. 3, pp. 59-63, 2022.
4. P. M. Khayitovna and M. S. Faxriddinovich, "Peculiarities of growing cauliflower," *Sci. Innovation*, vol. 1, no. D3, pp. 144-146, 2022.
5. P. Colunga-Salas, G. Hernández-Canchola, E. Grostieta, and I. Becker, "Unicellular endoparasites of bats (Version 1) [Data set]," Springer, 2019. [Online]. Available: <https://doi.org/10.5281/zenodo.3369923>
6. M. I. Botirov and S. Akramov, "Relationships between soil residues and the collection system," *J. Agric. Horticult.*, vol. 2, no. 9, pp. 10-15, 2022. [Online]. Available: <https://doi.org/10.5281/zenodo.7131539>
7. P. M. Xayitovna and M. S. Faxriddinovich, "Types of corn grown in Uzbekistan and their peculiarities," *Texas J. Agric. Biol. Sci.*, vol. 3, pp. 59-63, 2022.
8. P. M. Xayitovna and M. S. Faxriddinovich, "Cauliflower growing technology," *Texas J. Multidisciplinary Stud.*, vol. 6, pp. 8-10, 2022.
9. M. Abdullayev and S. Mamarajabov, "Varieties and achievements of wheat plant selection in Uzbekistan," *Eurasian J. Acad. Res.*, vol. 2, no. 11, pp. 100-104, 2022.
10. P. M. Khayitovna and M. S. Faxriddinovich, "Peculiarities of growing cauliflower," *Sci. Innovation*, vol. 1, no. D3, pp. 144-146, 2022.
11. A. V. Konstantinovich and V. A. Maslov, "Growing cauliflower seedlings correctly," *Kartofel i Ovoshchi*, no. 2, pp. 25-26, 2012.
12. A. V. Konstantinovich and V. A. Maslov, "Cultivate Color Cabbage Seedlings Correctly," *Kartofel i Ovoshi*, no. 2, pp. 25-26, 2012.
13. H. D. C. Qizi, et al., "Jasminum Turkumi," *Innovation: The Journal of Social Sciences and Researches*, vol. 1, no. 6, pp. 53-56, 2023.
14. J. G. D. Qizi, S. K. O. Shaymanov, and S. F. Mamarajabov, "Morphology and Landscape Characteristics of Go'Zal Catalpa," *Innovation: The Journal of Social Sciences and Researches*, vol. 1, no. 6, pp. 46-49, 2023.
15. G. N. Jumageldiyevna, M. A. Abdurayimova, and S. F. Mamarajabov, "Pistacia Turkumi," *Innovation: The Journal of Social Sciences and Researches*, vol. 1, no. 6, pp. 36-38, 2023.
16. G. N. Jumageldiyevna and S. F. Mamarajabov, "About Kiwi Fruiting," *Innovation: The Journal of Social Sciences and Researches*, vol. 1, no. 6, pp. 12-17, 2023.
17. G. N. Jumageldiyevna, M. A. Abdurayimova, and S. F. Mamarajabov, "Elm (Ulmus) Species," *Innovation: The Journal of Social Sciences and Researches*, vol. 1, no. 6, pp. 32-35, 2023.
18. M. Abdullayev and S. Mamarajabov, "Varieties and Achievements of Wheat Plant Selection in Uzbekistan," *Eurasian Journal of Academic Research*, vol. 2, no. 11, pp. 100-104, 2022.
19. P. M. Xayitovna and S. F. Mamarajabov, "Cauliflower Growing Technology," *Texas Journal of Multidisciplinary Studies*, vol. 6, pp. 8-10, 2022.
20. P. M. Xayitovna and S. F. Mamarajabov, "Spread of Potato," *Uzbekistan's Journal of Innovations and Scientific Research*, vol. 2, no. 18, pp. 209-212, 2023.
21. M. A. Abdulkarimovna, A. M. Kulmurotova, and S. F. Mamarajabov, "Tomato Pests," *Finland International Scientific Journal of Education, Social Science & Humanities*, vol. 11, no. 2, pp. 427-430, 2023.
22. P. M. Xayitovna and S. F. Mamarajabov, "Types of Corn Grown in Uzbekistan and Their Peculiarities," *Texas Journal of Agriculture and Biological Sciences*, vol. 3, pp. 59-63, 2022.
23. M. N. Xushvaqtova and S. F. Mamarajabov, "Achchiq Bodom Turkumi," *Innovation: The Journal of Social Sciences and Researches*, vol. 1, no. 6, pp. 141-149, 2023.
24. S. F. Mamarajabov, "Berberis (Zirk) Turkumi," *Uzbekistan's Journal of Innovations and Scientific Research*, vol. 2, no. 16, pp. 690-694, 2023.

# Indonesian Journal of Innovation Studies

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25. G. N. Jumageldiyevna and S. F. Mamarajabov, "Acer (Zarang) Turkumi," *Innovation: The Journal of Social Sciences and Researches*, vol. 1, no. 6, pp. 6-11, 2023.
26. M. Xudaynazarovna, G. R. Muxammadiyeva, and S. F. Mamarajabov, "Features of Different Types of Soil and Their Impact on Plant Productivity," *Uzbekistan's Journal of Innovations and Scientific Research*, vol. 2, no. 18, pp. 204-208, 2023.