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Potential of Industrial Tomato Production of Southeast Anatolian Region in Turkey

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ABSTRACT: Due to the availability of different climatic characteristics and soil types most of the vegetables can be produced in Turkey. Country is divided to 9 regions in terms of vegetable production and each region is known to have the potential of different vegetable production. Tomato is not only the mostly grown vegetable but also it has the widest range of processed product in Turkey. Turkey has 28.6 million tons of vegetable production and also it is the fourth country in the World. The vegetable production of 86% is open field vegetable and 14% of greenhouse production. Turkey has 12.61 million t. tomato production. This production includes table (8.170 t) and industrial (4.445 t) tomato. And tomato is the most growing vegetable with 42% of total production in Turkey. Tomato production of Southeast Region is 677 600 t in 66 474 ha. The region has 359 734 t table tomato production in 39.571 ha and the industrial tomato production is 317 886 t in 26 903 ha. The region has great potential in terms of tomato production. South Eastern Anatolia Region has strong and big potential for marketing and growing of tomato besides Marmara region. So development of the tomato based industry will ultimately increase the new investment and employment opportunities in the region. Existing status of the tomato agriculture and the tomato processing industry and their future in Southeastern Anatolia Region were focused of this study.

Key Words: Production, South-Eastern Anatolia, tomato, tomato processing

Türkiye Güneydoğu Anadolu Bölgesi' nin Sanayi Domatesi Üretim Potansiyeli

ÖZET: Türkiye'de farklı iklim ve toprak yapısı nedeni ile birçok sebze türü üretilebilmektedir. Ülkemiz sebzecilik bakımından 9 bölgeye ayrılmakta ve her bölgenin de farklı sebzecilik potansiyeline sahip olduğu bilinmektedir. Domates ülkemizde en fazla üretilen sebze olarak ilk sırayı alırken işleme sanayi olarak da ürün yelpazesi en geniş olan bir sebzedir. Türkiye 28.6 milyon ton sebze üretimi ile dünyada 4. Sırada yer almaktadır. Sebze üretiminin %86' ı açıkta %14' ü ise örtüaltında yapılmaktadır. Türkiye 12.61 milyon ton domates üretimine sahiptir. Bu üretimin 8. 171milyon tonu sofralık, 4.445 milyon tonu ise sanayi tipi oluşturmakta ve domates Türkiye sebze üretiminin %42 si karşılayarak en fazla üretilen sebze olarak ilk sırada yer almaktadır. Güneydoğu Anadolu Bölgesinin 66 474 ha alanda 677 600 ton domates üretimi bulunmaktadır. Bölgenin 39 571 ha alanda 359 734 ton sofralık ve 26 903 ha alanda ise 317 886 ton sanayi tipi domates üretimi bulunmaktadır. Bölge domates üretimi bakımından büyük bir potansiyele sahiptir. Çalışma ile sektörün yoğunlaştığı Marmara bölgesi dışında güçlü bir Pazar ve yetiştiricilik potansiyeline sahip olduğu düşünülen Güneydoğu Anadolu Bölgesinin ürün bazında sektör olarak (domatese dayalı işleme sanayi) değerlendirilmesine dikkat çekmesi beklenmektedir. Böylece bölgede yeni yatırım ve istihdam alanlarının açılması beklenmektedir.

Anahtar Kelimeler: Domates, Güneydoğu Anadolu, üretim, sanayi domatesi

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INTRODUCTION

Vegetables have an important place in human diet. The necessity of consuming vegetables in terms of health is understood better with each passing day. The reason for this is that they have many health benefits such as not containing fat, containing lots of water, being fibrous, being easy to digest and not causing weight gain. In addition, due to the recognition of alternative medicine's healing properties these days, it is evident that the consumption and production of vegetables are experiencing a rising trend. Some vegetables' unique flavors and aromas and thus their heavy consumption, has made these vegetables indispensable products. Nowadays we have tomatoes as the vegetable most used in the Turkish kitchen, directly in meals during summer and in many meals as ketchup, making them to be a vegetable where we almost cannot think of a meal without. Tomato is accepted to be a vegetable consumed on our tables fresh or cooked. Because of its high consumption, tomato is not just a summer vegetable but one that leads production as the most grown vegetable in greenhouses. Therefore, in order to meet the increased demand, this vegetable's growing has become widespread. The introduction of this vegetable, with such a high consumption rate, to our country corresponds to a quite recent time period in contrast to what is believed. Tomato, whose motherland is South America and which has an important place in the Turkish agriculture food industry, is reported to have entered Turkey during the 1.World War (Demiray and Tülek, 2008).

While the tomato's entry into the country and its use has a past of 100 years, today it has gained prominence as the highest consumed vegetable and consumption of tomatoes has taken off in this country (Şeniz, 1992). Since our country has different climate structures, different vegetable growing potential exists in each region. However, tomato is a vegetable, unlike other vegetables that could be grown in many regions where its consumption is more as the leading vegetable in comparison to others. Its inclusion in almost all meals in the kitchen together with the flavor and aroma it provides, it has provided us to be among the leading consumers and producers in the world. Even though our country is not part of the tomato's gene center, it has wide variations. Meaning, there are local varieties or genotypes in many regions that have adapted to that region and referred to by their regional names. Unlike other vegetables, in addition to being consumed fresh, tomatoes with a wide area of use are used in the tomato industry and the vegetable processing industry and used as raw materials in all the sub-branches of these industries. These are; canned fruit and vegetable industry, ketchup industry, fruit juice industry, frozen, dried vegetable and fruit industry sectors (Uylaşer, 1996; Keskin and Gül, 2004). The wide area of use for the tomato has increased the income demand elasticity multiple and together with the greenhouse production it has also increased the supply elasticity. Due to the mentioned properties tomato processing industry is the first developed industry branch. The lower shelf life of tomatoes compared to many other vegetables has also contributed to be an important factor in the development of industrialization in order to provide durability. Starting with the 1970s, parallel to the establishment of the tomato industry and its rapid development, the tomato production in our country gained momentum and succeeded in joining the world production giants like the USA and Italy in world ranking.

Being among one of the indispensable ones in human diet has provided the tomatoes to be the leading one among agricultural products which are produced, consumed and have become subject to trade. In addition to fresh consumption of tomatoes, the multitude of uses in the food industry such as frozen, tomato paste, ketchup, sauce, pickles, tomato juice, tomato puree, peeled tomato, sliced tomato, tomato cut as cubes, dried tomatoes, canned tomatoes increase tomato's importance (Uylaşer, 1996; Keskin and Gül, 2004). In conjunction with regional density in tomato production, the processing industry has also been concentrated in the Marmara and Aegean regions. The Mediterranean region is known more for its greenhouse type production geared for fresh consumption (Arıkbay, 1996).

Our country is among the top 4 countries with 28.6 million tons of vegetable production in an area

of approximately 8.5 million decares (1000m²). In regard to the tomato's world production (123 120 000 t), Turkey is ranked 4th after China, India and the USA in terms of planted area and production amount (FAO, 2013). According to Turkey's TÜİK data in 2015, out of a total 12,61 million t. of tomato production, 8.170 thousand tons constituted table consumption and 4.445 thousand t. constituted tomatoes to make ketchup. With this amount of production, tomato is the most grown vegetable in our country and constitutes almost 42% of the total vegetable production. Approximately 71.3% of the tomato produced in Turkey constitutes tomato production for table consumption and 29.7% constitute tomato production for the industry. Approximately 25-30% of the tomato produced gets processed in the food industry and the remaining amount goes to fresh consumption (Düzyaman and Duman, 2003). Out of the total amount processed, 80% is used for tomato paste, 15% for canned tomatoes and the remaining amount is used for manufacturing of ketchup, tomato juice and tomato products (Sarısaçlı, 2010). 86% of production in Turkey is in the open and 14% is under covers in greenhouses. Nowadays, apart from the canned industry's other products in approximately 100 operations and facilities, mostly tomato paste is produced (Keskin, 2012). Even though tomato production shows variance in terms of regions, tomato paste and canned production known as industry tomato is concentrated in the Marmara region. However, it is known that tomato production exists in other regions as well with a size not be sniffed at. The Southeast Anatolia region is located very advantageously in terms of vegetable production. Upon the commissioning of GAP, new agriculture area shall be opened to irrigation. Considering that the vegetable farming shall increase with irrigation gain effectiveness, it is expected that such a vegetable like tomato with a wide range of products, shall have its production increased. The fact that tomato and tomato paste use in the region is high, it shall cause serious increase in its production and become widespread.

According the 2015 TÜİK data, the Southeast Anatolia Region has 164 262 acre planted area and 677 600 t of production amount. While the Region has 97 783 acre of planted area and 359 734 t of production for fresh, table consumption, it has 66 479 acre of planted area and 317 866 t of tomato production for tomato paste. The region has a great potential in terms of tomato production. However, it is also known that there is insufficiency of industrial facilities in the region based on tomato and a serious marketing issue that would increase fresh consumption and provide guidance. Despite the large amount of fresh consumption of tomato and tomato paste in the region, occasionally tomato needs are met from outside the region. The objective of the study was to put forth the production potential of tomato in the Southeast Anatolia Region and if any, the current status of the industry sector based on tomato and the future of tomato growing in the region. Therefore, efforts were made to put forth the development of vegetable growing in general and specifically the development of tomato in the region or the industry sector based on tomato, formation of new employment areas based on this sector and conduct of a research to have the region meet its own tomato needs. At the same time, local types were taken into consideration and their use in production was targeted.

TOMATO PRODUCTION IN TURKEY

Turkey's total vegetative production area (acre) is approximately 239 486 338.14 and the vegetable area is 8 085 070.00. It is observed that tomato with its (12.6 million tons) among the vegetables whose fruits are eaten, has the highest production among all the vegetables whose total production is 25 606 476 t. It shows that tomato by itself counts for almost half (%42) of the production of all the vegetables. Upon reviewing Table 1, it can be seen that the production level of tomato, while it does differs by year, has displayed a rising trend and increased from 10.050 million t. of production in 2005 to 12.615 million t. in 2015. The annual distribution of tomato production from 2005 to 2015 has shown an increase each year for both fresh consumption and also as tomato for the industry. During the recent years, the tomato productivity in our country has increased in conjunction with high quality seeds and the use of technological production systems (Erdal, 2006).

Table 1. Tomato Production of Turkey (ton)

Years	Industrial Tomato	Table Tomato	Total
2005	2 983 000	7 067 000	10 050 000
2006	2 942 132	6 912 745	9 854 877
2007	2 973 393	6 963 159	9 936 552
2008	3 565 541	7 419 814	10 985 355
2009	3 539 611	7 205 961	10 745 572
2010	2 878 812	7 173 188	10 052 000
2011	3 430 002	7 573 431	11 003 433
2012	3 652 039	7 697 961	11 350 000
2013	3 878 220	7 941 780	11 820 000
2014	3 914 890	7 935 110	11 850 000
2015	4 445 000	8 170 000	12 615 000

(Anonymous 2015. Crop Production Statistics Database)

This situation is an evidence that our country attaches great importance to it, nevertheless its position in the domestic market has caused an increase in tomato growing due to the technology utilized in recent years, being aware of the importance of using high quality seeds, studies made on quality and positive results in research and development. Today, there are industrial type of operations involved in mostly tomato paste production in different regions whose numbers keep going up. Marmara region with the most of these firms is a leading region in the production of tomato paste (Sarısaçlı, 2006). The effect of ecologic conditions in this region on the tomato production seems to be the basic reason for this concentration (Pirinç, 2006). Upon review of the Table 1, it is observed that tomato production has been increasing over the years and majority of this increase concerns the industrial type tomato. When the last 10 years' tomato production is reviewed, production which was 10 050 000 tons in 2005 has increased to 12 615 000 tons in 2015. However, the most important reason for this increase can be stated to be arising from industrial type tomato. While a 25% increase occurred in total tomato production during the last 10 years, the industrial type tomato production's rate of increase was 49%. These data are indicators that industry based on tomato is also in an upward swing. Parallel to the increase in production amount of tomatoes, increase in productivity per unit area has also been observed.

Upon review of Table 2. according to 2105 TÜK data, in terms of fresh tomato consumption (table tomato) distribution by region, the Mediterranean region is observed to be in first place with 391 030 acre planted area and 3 662 820 t. of production. When the planted areas of tomatoes for tomato paste are reviewed in terms of their regional distribution, it is seen that the Aegean Regions is in first place with 218.466 acre planted area and 1 652 841 t. of production followed by the East Marmara Region. While, the table tomato in the Southeast Anatolia Region has 97 783 acre of planted area and 359 734 t. of production, tomato for tomato paste is observed to have 66 479 acre of planted area and 317 866 t. of production. Tomato processing industry which has an important place within the vegetable processing industry, has started developing in the modern sense in 1967 and by the 1970s, it has displayed a rapid development with the increase in demands from abroad and internal incentives (Turhan, 2007).

Table 2. Tomato Production of Regions in Turkey (ton)

Region	Table tomato		Industrial tomato		Total	
	Production (T)	Area (acre)	Production (T)	Area (acre)	Production (T)	Area (acre)
Mediterranean	3.662.820	391.030	53.929	17.105	3.716.749	408.135
Ege	1.282.431	208.051	1.652.841	218.466	2.935.272	426.517
West the black sea	934.163	150.655	57.242	16.403	991.405	167.058
East Marmara Region	603.345	100.706	1.596.269	168.299	2.199.614	269.005
West Marmara	433.735	75.244	581.958	94.289	1.015.693	169.533
Southeast Anatolia Region	359.734	97.783	317.866	66.479	677.6	164.262
West Anatolia	308.601	66.167	122.656	20.005	431.257	86.172
Middle Anatolia	216.780	60.526	53.102	10.420	269.882	70.946
The middle east Anatolia	203.435	63.639	8.407	2.798	211.842	66.437
İstanbul	18.592	4.644	147	60	18.739	4.704
East the black sea	13.220	5.888	583	192	13.803	6.080

(Anonymous 2015. Crop Production Statistics Database)

Upon observation of Turkey in general, it is evident that industrial type of tomato production has been concentrated in the Aegean and East Marmara regions and again the concentration of industrial vegetable growing facilities (tomato paste and canned tomato plants) has been observed in these regions. 44 firms are in business in our country on the subject of tomato paste production and their total production capacity is about 600.000 t. The major firms can be counted as Tat, Tukaş, Tamek, Penguen and Akfa. The mentioned firms control close to 60-70% of the market. 64% of Turkey's tomato paste production is done in Bursa. The fact that majority of our country's tomato paste and canned tomato need is met by the Marmara region, it is fair to say that tomato production of other Regions and especially the Southeast Anatolia regions is mandatory.

SOUTHEAST ANATOLIA REGION TOMATO PRODUCTION

As part of the study Diyarbakır, Mardin, Gaziantep, Adıyaman, Kilis, Şanlıurfa and Şırnak provinces shall be taken into consideration within the scope of Southern Anatolia region. The region's general characteristics; hot and dry during summers and vegetation period is 5-7 months, not a long period and insufficiency of irrigation water and precipitation in some regions and its inconsistency during a year are the most apparent features. The winter months with low temperatures and the high temperatures during the summer are the region's characteristic properties. It is a known fact that there are productive agricultural areas in the region however it is also known that a single type of production, even mono culture is done in various places; agriculture of wheat and at times cotton is intensive. The vegetable agriculture is lower when compared to other products however this is thought to be due to lack of agriculture policies that support vegetable growing. Nevertheless, even though the region has the potential to be able to meet its regional vegetable needs, especially tomato need is met from outside of the region occasionally.

Growing vegetables requires irrigation water and since it has a distinct and unique growing different from other products' growing, it needs a concentrated labor and care. This situation weakens vegetable growing in some places. As a result of the commissioning of the GAP, new agriculture

lands have joined production and with the arrival of irrigation water, vegetable growing is also expected to increase. The most important factors in the region that limit vegetable growing are the insufficiency of irrigation water and, the high temperatures during the summer months which cause low productivity and quality in vegetables such as tomatoes, peppers, eggplants. However, while the arrival of water resolves the irrigation issue the high temperatures is an important problem that we keep facing. This issue is thought to be solvable by some manipulations. Growing vegetable varieties extensively such as tomatoes which are tolerant to high temperatures in this region and the implementation of different planting dates will positively impact growing of such vegetables. Despite all adversity due to climate in the region, it is crucial that the local vegetable genotypes continue their availability until now; such as Diyarbakır, Lice tomato, watermelon, eggplant, Şanlıurfa eggplant, pepper, Savur tomato. Processed products done in the region such as tomato paste, pepper paste, chili pepper, dry and stuffing vegetables without any supportive agriculture policy in the region for growing vegetables, is the most important indicator for the region's potential in vegetable growing, especially tomatoes. The region is in a position to be open to new type and varieties in terms of vegetable growing. The fact that some vegetables which were not grown previously or has limited growing are being grown nowadays, mean that broccoli, cauliflower, cabbage etc. vegetable growing are examples that vegetable growing has growth tendency.

In light of all these data, a very serious plan and program has to be done in the region to have vegetable growing increase. It is seen in the table that vegetable growing is done in each province of the region. Upon review of these tables, it is noticed that tomato has the highest production amount among all the vegetables.

In order to have vegetable growing develop in the region, product and products have to be given priority which would bring along the industry, employment, production and some new innovations alongside. Tomato is in first place which could meet all these. When tomato is grown as table and industry type, it would bring along many consumption types alongside. Tomato production entails drying, paste, canned, frozen, tomato juice, pickle etc. many processing technologies.

All these mentioned shall develop as a separate sector in the region. Meeting tomato need within the region in consideration of the people's palate, it shall provide the installation of new investments and work opportunities (paste and can factories, tomato drying facilities, pickle etc.) in the region. In addition, in case the traditional tomato growing in the region is coupled with modern growing techniques and working with appropriate quality and productive varieties, the tomato potential is expected to increase much more. In regard to the provinces in the region within the scope of GAP, increase in vegetable growing areas and in parallel increase in the new vegetable types and varieties is also expected to increase. In the region, each province has their own distinct, unique ecological and economical characteristics and these are two important factors in determining the guidance of vegetable growing. In light of all these, the region's vegetable growing and especially the growing of tomatoes need to be scrutinized.

The total growing area and the vegetable production values for the region's provinces are provided in table 3. As it can be seen from the table, Şanlıurfa's agriculture land is 11 810 432.00 decares and vegetable growing takes place on 204 450.00 decares of this area. The production amount in the province concerning the types whose fruits are eaten, including tomato is approximately 767 547 t. The second place is Diyarbakır's with its total agriculture land of 6 059 567.00 acre and vegetable gardens of 154 512.00 acre and total production of 414 293 t. The fact that Şanlıurfa is in the center of GAP, it is natural for it to be in first place and in fact these values are expected to increase even much more in due time. When the vegetable production areas are proportioned to the total vegetation production, it can be seen that in all provinces vegetable production areas are at very low levels.

Table 3. The total vegetable and tomato production values (Tüik 2015)

Region	Total Area (acre)	Total Vegetable Production (acre)	Tomato Production (T)
Diyarbakır	6.059.567	154.512	414.293
Mardin	3.281.970	100.360	207.962
Gaziantep	3.592.456	86.404	151.332
Adıyaman	2.386.563	57.236	103.328
Kilis	1.050.447	66.258	156.912
Şanlıurfa	11.810.432	204.450	766.547
Şırnak	944.625,00	9.951,00	15.796

Data are grown for edible vegetables fruit

This situation shows the insufficiency of areas assigned for vegetable growing in the region. In other provinces of the region, such as Kilis and Mardin, the insufficiency of irrigation water seems to be an important factor. However, mentioning the same things for Gaziantep and Adıyaman are not appropriate. It is known that agricultural activities are concentrated in these provinces and that there is no irrigation water problem and especially in Adıyaman province melon and water melon agriculture is abundant. In these provinces, especially in Gaziantep, in consideration of the density of industrial type production and industrial sector, tomato production is expected to increase. The total vegetable and tomato production values for the region's provinces are provided in table 4. As it can be seen from the table, according to tomato's planted areas in the Southeast Anatolia Region, the highest is Şanlıurfa with industrial tomato (45.995) and Table Tomato (37.527), Diyarbakır in the second place with industrial tomato (15.058) and Table tomato (22.508).

Table 4. Southeast Anatolia Region (Tomato Industrial, Table Tomato end Total) Tomato Production

Region	Industrial Tomato		Table Tomato		Total	
	Production Region (Ha)	Production (T)	Production Region (Ha)	Production (T)	Production Region (Ha)	Production (T)
Diyarbakır	15.058	37.826	22.508	69.070	37.566	106.896
Mardin	300	595	12.012	21.729	12.312	22.324
Gaziantep	110	232	3.932	9.071	4.042	9.303
Adıyaman	430	1.262	7.771	19.869	8.201	21.131
Kilis	4.576	22.693	4.113	20.403	8.689	43.096
Şanlıurfa	45.995	255.235	37.527	198.879	83.522	454.114
Şirnak	10	23	470	1.199	480	1.222

(Anonymous 2015. Crop Production Statistics Database)

If production values are taken into consideration, Şanlıurfa's total tomato production is 454 114 tons and 255 235 t. of that is industrial tomato. It can then be said that the highest industrial type tomato production in the Region is in Şanlıurfa and this value is pretty promising. Even though there is no facility in the province which is based on tomato paste and tomato, the fact that industrial type tomato is grown means that home type or small operation type of production can be talked about. However, it is known that a firm (TAT) has conducted industrial type tomato production studies in this province in the past and as result of infrastructure work, the building of a facility was targeted. Facilities in this province of ours with a plain such as Harran's productive agricultural land is believed not to encounter any problems finding raw materials in industrial type of production. The fact that this province is in the center of GAP thus would be the first to benefit from irrigation and other opportunities, concentration of tomato based sector and tomato production here would be more beneficial. However, the high temperatures prevalent in this area during the summer months continue to be a factor adversely effecting tomato growing. Despite the validity of this issue for all the provinces in this region, its impact is more evident in Şanlıurfa and Diyarbakır provinces. In order to resolve this issue or at least partially lessen its impact would be possible by the introduction of varieties that are tolerant to high temperatures and by periodic planting periods. Our province with the lowest tomato production value is Şırnak with 1.222 t. Since this province of ours is in a mountainous region and also in consideration of the insufficient irrigation, low vegetable production in general may be thought to be natural. It has been observed that industrial type tomato production in the region is generally low while the table tomato production is higher. Upon review of Table 4, it can be stated that tomato production in the region is concentrated more in Şanlıurfa and Diyarbakır areas. The characteristics of these two provinces could be the increase in new vegetable growing with the arrival of irrigation water. This increase is expected to gain momentum in time. Therefore, it would be beneficial to scrutinize the tomato production in the region in these two provinces. Şanlıurfa province has productive, irrigable land suitable for vegetable farming. It is known that with GAP, there is an increase in the amount of land that is productive and irrigable. A plain such as Harran, seems to be a suitable area for tomato production. The need for raw material (tomato) for the facilities to be built in this province or other provinces of this region based on tomatoes can be provided by Şanlıurfa province. In this province, especially around Siverek in villages from the Karacadağ mountainside all the way to Diyarbakır intensive tomato production is realized. Even though Karacadağ region includes partially Diyarbakır province border, it is like a "tomato basin". Tomato agriculture performed at a commercial scale keeps increasing by day. Tomato agriculture done as table tomato provides products to Diyarbakır and Şanlıurfa as their primary markets however they send products to other provinces as well occasionally.

In Diyarbakır, tomato growing is in many places, especially where vegetable growing potential is intensive. The place has its own distinct, unique local genotypes and studies are conducted on these. Local genotype growing such as Lice tomato appropriate for the locals' palate are grown especially in Lice district intensively. By concentrating on this genotype, feasibility work to have tomato paste plant built was conducted in 1998. In fact, due to great interest and appreciation of this genotype similar varieties have been developed and introduced to the market. It is also known that the province has an intensive tomato production in Karacadağ mountainside and it houses a potential which we could name as "tomato basin". Tomato is also at the forefront in Diyarbakır province as the vegetable which is grown the most. The area also has a large demand in the production and consumption of tomato and tomato paste (homemade).

CONCLUSION

The conduct of tomato growing in all the provinces of the region can also be observed in the statistical data. While tomato is a vegetable that is consumed with pleasure in the region, it is also consumable fresh and in different forms. Tomato is generally

consumed fresh in food in the region while it also has a wide use as tomato paste, canned, dried, frozen and as pickle however, all these evaluation forms are done homemade and they get produced before being converted to an operations. The existence of an operation based on tomato is at a level where it is almost none. The use of tomato paste in the region's food culture is pervasive and meals eaten without tomato paste are considered almost non-existent. The region's tomato needs are met occasionally from distant markets such as Tokat. Utilizing the proximity advantage of the region to the Middle East countries, when priority is assigned to tomato production and industry based on tomato in the region, domestic and external markets shall not be a problem. The subjects to be taken care of in order to increase the production and popularize the tomato in the region are as follows;

- Increasing the table tomato production in the region using existing local genotype and giving priority to varieties that are suitable to the people's palate.

- It is known that the problem of high temperatures in summer months regarding tomato growing adversely affect pollination. This situation slows plant development and cause drops in productivity and the fruit quality. In order to resolve this issue, introducing high temperature tolerant varieties to the region shall be beneficial.

- Paying attention to packaging and increasing attractiveness of the table tomato, especially the local genotypes' introduction to the market.

- In consideration of spreading industrial tomato growing, attaching importance to farmer training efforts.

- Having farmers to be aware of the advantages of contract agriculture in tomato growing and especially concerning the industrial types.

- Introduction of industry type tomato varieties to the farmer that are suitable to the place, their spread and use in growing shall increase tomato production. At the same time, by forming the awareness that the use of industrial type of tomato varieties as tomato paste, canning, drying would be more advantageous than the table tomato, would spread the industrial type production.

- In consideration of the suitability of the region's climate and also the advantage that tomato production for drying is already done locally, it can be spread as a sector in the region.

- The establishment of facilities in the region based on tomato paste, canned, tomato juice, frozen and as pickle shall be beneficial. In consideration of the proximity, having these facilities built in different provinces and raw materials to be provided by different borders or within the same area shall contribute to the development of industry in the region based on tomato.

- The operations and facilities to be built in the region shall contribute the formation of new employment areas.

- In case of the increase in tomato production in the region, tomato needs shall be met internally and they shall be using the advantage of being able to send products to the neighboring provinces and countries.

- Attaching priority to farmer training in the region concerning tomato growing and providing information on mechanized growing, irrigation and technical subjects.

- In consideration of the region to be more advantageous in terms of vegetation protection, training the farmers on the subject of disease and harmful to prevent drop in productivity and quality.

- One of the big advantages of the region is to own organic agriculture basins. Using this advantage, to produce both fresh production and also the other tomato paste, canned, dried, frozen and pickle ORGANICALLY and gain high income.

- In order to use quality seeds in the region and spreading production using seedlings, establishment of Agriculture Ministry's incentive and support.

- Attaching priority to tomato growing in greenhouses in the region.

- In order to make greenhouse growing without heating economical, providing guidance to grow tomatoes in low tunnels during early spring periods.

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