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Evaluation of Vegetable Cultivation in Rize Province

ARZU KARATAŞ[1]

[1]*Recep Tayyip Erdogan University, Faculty of Agriculture and Natural Sciences, Horticulture Department, Rize, Turkey*

Abstract

The Rize located in the Eastern Black Sea Region has a unique special ecology even within its own that area due to its geographic, topographic and climatic features. This province has an agricultural area of 54.985,3 ha in total and total vegetable production is 1618 tons in 350,2 da. Vegetable cultivation are made in small areas near their homes to meet the family needs. Major crops are kale (597 tons), green beans (398 tons), cucumber (191 tons), pumpkin (147 tons), tomato (69 tons), kidney beans (64 tons) and pepper (39 tons). These crops are followed by zuccini, peas, chard, beetroot, mint, parsley and lettuce. Besides, local genotypes such as Turkish orange eggplant (*S. aethiopicum*), chive (*Allium schoenoprasum*), Jerusalem (*Helianthus tuberosus*) not recorded because of low production amounts and chayote (*Sechium edule*) introduced from Georgia are also grown. Outstanding obstacles in the development of vegetable growing are that diseases and pests are busy because of plenty of rain and high moisture content of Rize and that the soil becomes acidic as a result of taking excessive fertilization of. In this study, the current status of vegetable production, problems and solutions in Rize was discussed.

Keywords: Rize, Vegetable, Cultivation

Introduction

Rize is a city located in the north-east of Turkey and a coastal city in the Black Sea. Trabzon is located to the west of Rize located in the east of Black Sea Region, Artvin to the east, Bayburt to the south, and Erzurum to the south (Figure 1). The Rize lands on the northern slope of the coastal mountain range of the Eastern Black Sea coast are generally mountainous and rugged.

In Rize, the summers are cool, the winters are mild and there is a rainy climate every season. According to observations made over fifty years, Rize's annual temperature average is slightly over 14 ° C. The lowest temperature recorded during this time is -7 ° C and the highest temperature is 38,2 ° C. The temperature average of January, the coldest month, is 6.6 ° C, the temperature average of August, the warmest month, 23 ° C. January is at least -6.5 ° C, August is at most 34.0 ° C. The monthly average temperature curve in Rize is above 6 ° C all year and the temperature average of only 4 months is below 10 ° C and Rize is a very moisty city. The lowest rainfall was recorded in April (90,8 kg / m^2), May (97,5 kg / m^2), June (134,3 kg / m^2) and the highest rainfall was recorded in September (252,9 kg/m^2), October (287.6 kg / m^2) and November (250,6 kg / $m^{2)}$. Rize has an oceanic climate (MGM, 2015).

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Corresponding author: Arzu Karataş, PhD
Recep Tayyip Erdogan University, Faculty of Agriculture and Natural Sciences, Horticulture Department, Rize, Turkey
E-mail: karatasarzu@hotmail.com
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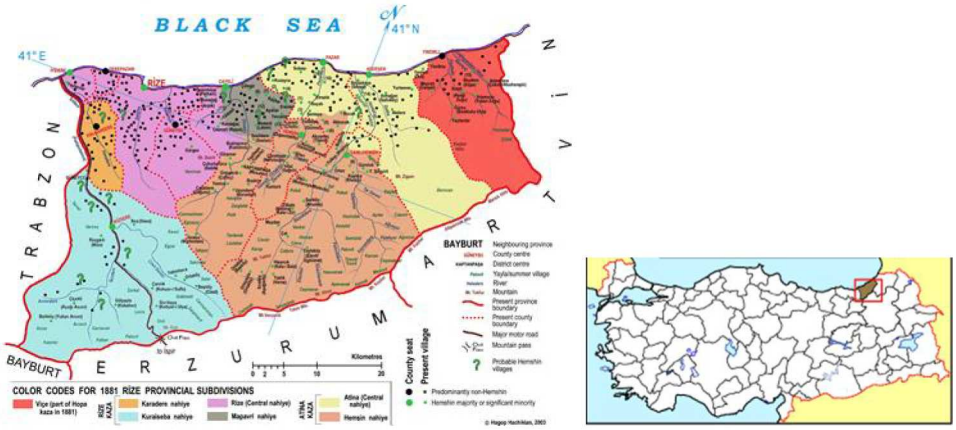

Figure 1. Rize Province Map

When the population information of Rize is evaluated, the number of population has increased in parallel with years. The rural population, which was initially 77%, fell to 33% in 2016 and the urban population increased from 23% to 67% (Figure 1).

Table 1. Rize Population Number (TUIK, 2017)

Year	Total	Rank	Difference	Urban		Rural	
1965	281.099	46		%23	63.554	217.545	%77
1970	315.700	46	%12▲	%23	72.714	242.986	%77
1975	336.278	49	%7▲	%25	82.708	253.570	%75
1980	361.258	48	%7▲	%27	96.152	265.106	%73
1985	374.206	50	%4▲	%30	111.368	262.838	%70
1990	348.776	51	-%7▼	%38	133.370	215.406	%62
2000	365.938	52	%5▲	%56	205.245	160.693	%44
2007	316.252	57	-%14▼	%62	197.167	119.085	%38
2008	319.410	57	%1▲	%59	189.704	129.706	%41
2009	319.569	57	%0▲	%61	195.569	124.000	%39
2010	319.637	57	%0▲	%62	197.520	122.117	%38
2011	323.012	57	%1▲	%63	202.636	120.376	%37
2012	324.152	56	%0▲	%64	207.631	116.521	%36
2013	328.205	56	%1▲	%62	204.194	124.011	%38
2014	329.779	56	%0▲	%64	211.495	118.284	%36
2015	328.979	56	-%0▼	%66	215.596	113.383	%34
2016	331.048	56	%1▲	%67	221.040	110.008	%33

The land area of Rize is 391,900 hectares with 14% agricultural land (54,98 ha), 28% grassland-pastureland, 46% forest land and 12% non-agricultural land (Table 2).

Table 2. Rize Land Distribution (IGTHM, 2015)

Soil Wealth and Distribution	**Area (Ha)**	**(%)**
Arable land	54.87	14
Grassland	109.73	28
Forest and shrubbery	180.27	46
Non-agricultural land	47.03	12
TOTAL	**391.90**	**100**

Current Situation in the Production of Vegetables of Rize

In Turkey, which is the fourth largest producer of vegetables in the world after China, India and the United States, total vegetable production is 8,084,876 ha and 28,561,371 tons. In Rize, total vegetable production happens to be 1,618 tons in a field of 3.502.

Table 3. Spatial Distribution of Rize Crop Production (IGTHM, 2015)

Crops	Production Area (Da)	Share in The Province Total Area (%)
Tea	501.979	91.3
Hazelnut	36.097	6.5
Kiwi	3.508	0.6
Blueberry (Likapa)	160	0.1
Other Fruits	624	0.2
Field Crops	3.932	0.7
Vegetables	3.502	0.6
Total Area	**549.802**	**100**

While tea fields constitute 91% of total agricultural land in Rize, vegetable production area is only 0.6% (Table 3). However, even in low quantities, many types of vegetables are grown. Mainly grown products are kale (597 tons), bean (398 tons), cucumber (190 tons), pumpkin (147 tons), tomatoes (69 tons), pinto bean (64 tons).

Table 4. Vegetable Production Values in Rize (TUIK, 2013)

Crops	Production Area (Da)	Production Quantity (Tons)
Cabbage (Kale)	1700	597
Lettuce (Crispy)	6	3
Lettuce (Cos)	8	5
Chard	42	13
Parsley	14	5
Onion (shallot, green)	92	37
Tomatoes	84	69
Cucumber	240	190
Cucumber (Pickle)	1	1
Bell pepper	48	15
Long pepper	67	24
Eggplant	16	13
Squash (Sakız)	22	22
Pumpkin	159	147
Peas (green)	23	15
Beans (green)	747	398
Pinto Bean	233	64
TOTAL	**3502**	**1618**

Squash, peas, chard, red beets, mint, parsley, lettuce follow these. In addition, production of 1.97 tons of oyster mushrooms is also grown in the transition period of organic agriculture. In terms of the area used, Cabbage (Kale), which is a local specialty product, is grown in 1,700 decares.

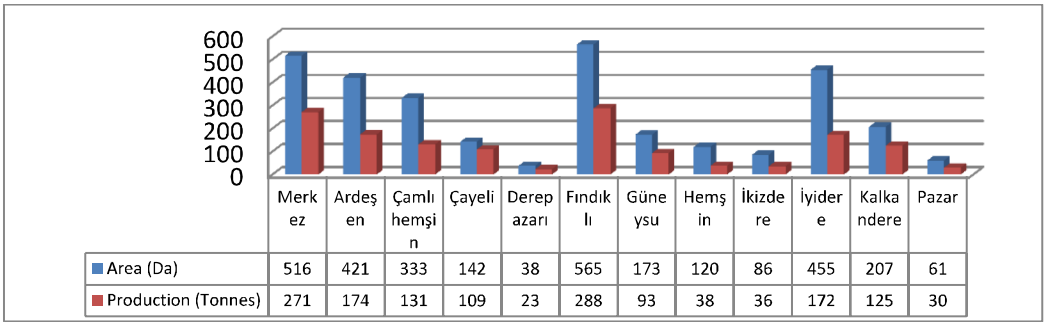

Figure 2. Vegetable Production Values of Province and Districts of Rize (TUIK, 2013)

Rize consists of 11 provinces; Ardeşen, Çamlıhemşin, Çayeli, Derepazarı, Fındıklı, Güneysu, Hemşin, İkizdere, İyidere, Kalkandere, Pazar. The highest production area for vegetable production in terms of vegetable production including Rize city center is seen in Fındıklı district with 565 da. This is followed by City center (516 da), Iyidere (455 da), Ardeşen (421 da) and Çamlıhemşin (333 da) respectively. The lowest vegetable production area belongs to Derepazarı (38 da). Fındıklı (288 tons) is the highest value in terms of vegetable production. This district is followed by City center (271 tons) and Ardeşen (174 tons), Iyidere (172 tons) and Çamlıhemşin (131 tons).

Table 5. Vegetable Production Values of Rize Province and Districts (TUIK, 2013)

Districts	Crops	Production Area (Da)	Production (Tons)
City Center			
	Cabbage (Kale)	305	119
	Chard	7	3
	Onion (shallot, green)	20	10
	Tomatoes	15	10
	Cucumber	35	28
	Bell pepper	7	2
	Long pepper	5	2
	Pumpkins	27	21
	Beans (green)	95	76
Total		**516**	**271**
Ardeşen	Tomatoes	15	15
	Cucumber	15	11
	Bell pepper	5	3
	Long pepper	5	3
	Eggplant	5	4
	Pumpkins	20	20
	Peas (green)	3	1

	Beans (green)	80	32
	Pinto Beans (green)	3	1
	Onion (shallot, green)	5	3
	Cabbage (Kale)	250	75
	Lettuce (Cos)	3	2
	Chard	7	2
	Parsley	5	2
Total		**421**	**174**
Çamlıhemşin	Cabbage (Kale)	253	88
	Chard	7	2
	Onion (shallot, green)	40	8
	Squash (Sakız)	22	22
	Pumpkins	11	11
Total		**333**	**131**
Çayeli	Cabbage (Kale)	52	26
	Cucumber	45	45
	Beans (green)	45	38
Total		142	109
Derepazarı	Cabbage (Kale)	11	3
	Lettuce (Crispy)	1	
	Chard	1	1
	Tomatoes	2	2
	Cucumber	5	4
	Eggplant	1	1
	Pumpkins	1	1
	Peas (green)	1	1
	Beans (green)	15	10
Total		**38**	**23**
Fındıklı	Cabbage (Kale)	230	69
	Lettuce (Crispy)	5	3
	Lettuce (Cos)	5	3
	Chard	8	2
	Parsley	8	2
	Onion (shallot, green)	12	10
	Tomatoes	28	27
	Cucumber	45	40

	Bell pepper	10	4
	Long pepper	4	2
	Eggplant	10	8
	Pumpkins	40	40
	Peas (green)	10	8
	Beans (green)	100	50
	Pinto Beans (green)	50	20
Total		**565**	**288**
Güneysu	Cabbage (Kale)	26	10
	Chard	8	2
	Parsley	1	1
	Cucumber	13	8
	Long pepper	5	2
	Pumpkins	15	15
	Beans (green)	25	19
	Pinto Beans (green)	10	8
	Cabbage (Kale)	70	28
Total		**173**	**93**
Hemşin	Cucumber	3	2
	Pumpkins	6	3
	Beans (green)	8	2
	Cabbage (Kale)	103	31
Total		**120**	**38**
İkizdere	Chard	1	
	Onion (shallot, green)	2	1
	Pumpkins	4	2
	Beans (green)	49	22
	Pinto Beans (green)	5	1
	Cabbage (Kale)	25	10
Total		**86**	**36**
İyidere	Onion (shallot, green)	5	1
	Tomatoes	14	9
	Cucumber	34	24
	Bell pepper	25	6
	Long pepper	45	14
	Peas (green)	7	4

	Beans (green)	15	6
	Pinto Beans (green)	10	3
	Cabbage (Kale)	300	105
Total		**455**	**172**
Kalkandere	Chard	3	1
	Onion (shallot, green)	8	4
	Cucumber	25	20
	Cucumber (Pickle)	1	1
	Pumpkins	25	25
	Beans (green)	50	37
	Pinto Beans (green)	20	4
	Cabbage (Kale)	75	33
Total		**207**	**125**
Pazar	Tomatoes	10	6
	Cucumber	20	8
	Bell pepper	1	
	Long pepper	3	1
	Pumpkins	10	9
	Peas (green)	2	1
	Beans (green)	10	4
	Pinto Beans (green)	5	1
Total		**61**	**30**

The settlement in the province of Rize is scattered both in the districts connected to the center and both in the villages because they are mountainous and the houses are built on the slopes. Houses are between trees and tea lands. Almost every house has a vegetable garden. These vegetable gardens are usually set in very small, sloping areas and mostly between trees. Besides, vegetable production is common in roadsides, coastal areas, tree spots, soil filled pots, bags and so on. Vegetable growing is not usually done in a commercial sense, but is done by women to meet the need of the family. However, some producers are able to sell small quantities as local products in public markets. The use of agricultural chemicals and fertilizers is generally at minimum level in cultivation. Especially in areas where organic tea production is carried out, vegetable production is carried out without using any chemicals, except for certification.

Evaluation of Vegetable Production in Rize

Positive aspects for vegetable growth in Rize

-The producers are generally women and they are very willing, hardworking and well-informed about the crops.

- Even though they have chosen the city as their living area, they are sometimes going to their villages during the production period to perform vegetable growing activities.

- In Rize province, vegetable farming is preferred because of the high price of vegetables, no need for irrigation due to climate, and allowing some crops to grow easily.

-The dispersed settlement makes gardening, especially vegetable growing brought into the foreground.

- Totally local genotypes are used in species such as beans, pumpkin, cucumber, kale, hot pepper, chard. These genotypes are particularly preferred. As a result of mixed cultivation, divergence is seen and genetic diversity is emerging.

- Rize's high moisture has always brought mushroom growing to the agenda, and producers have been involved in various initiatives on this issue. Oyster mushroom cultivation on logs is a good example of this. Even 1.97 tons of organic oyster mushrooms are produced during the transitional period (Anonymous, 2015; KARATAŞ, 2016).

Negative aspects for vegetable growth in Rize

- Eastern black sea region and especially the province of Rize is getting very heavy rainfall. For this reason, the amount of moisture is quite high. High humidity creates a suitable environment for diseases and pests, negatively affecting vegetable activities. Many pests such as potato beetle, *Ricania japonica*, aphid, moth, are present both because of climatic conditions, and because they are extensively present due to extraneous foreign plants in the environment. In addition, soil-borne diseases and pests are also excessive. There are nematodes in the soil.
- The fact that the soil is highly acidic, the producer does not have any information about the use of agricultural lime is the first outstanding negative aspect. That the animal husbandry is less limits the use of burnt stable manure. The need for fertilizers and organic substances are to be met by mixing the tea waste from the factories to the soil during the fall.
-The heavy rainfall causes seeds such as beans, chard, parsley to decay and germinate on the plant during seed, and it prevents to collect healthy seeds required for the following year.
- There is not enough space for cultivation, and areas are actually used are not suitable for vegetable cultivation. Especially in the areas where the sunlight is not sufficient among the trees and in small areas, many species are trying to grow together tightly. And this prevents reaching the desired result.

Solution Offers

- In order to improve vegetable growing, producers need to be informed about methods of combating diseases and pests practically.
- In order to overcome deficiencies in the soil, producers need to be aware of the nutrients and their protection in the soil.
- Mushroom cultivation which is compatible with climate of the province in terms of climate demand can be evaluated, to make the experiments in advance and to reflect the results to the producer can be increase and accelerate mushroom cultivation activities.
- The producers can be informed and introduced about various production systems such as vertical aquaculture systems which can get more products than small areas.

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