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Determination and Comparison of Gamma Radiation Levels of Dried Fruits and Vegetables

Ismail Serkan Üncü[*a], **Çağatay Bilge Keleş**[b]

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ABSTRACT

Humans need food consumption to survive. Today, the effects of the fruits and vegetables we eat on our body are being investigated biologically. However, the radiation exposure taken from these foods to our body is not well known. Therefore, the radiation levels of these dried fruits and vegetables were determined with a special detector for approximately eight months in order to determine the level of gamma radiation from dried fruits and vegetables. Since our measurements are at hourly level, when we change 0.25 mSv/year hourly, the reference value is taken as 2.85x10-5 mSv/h. The dried fruits and vegetables in the experimental study are greenhouse tomato, organic tomato, rose petal, rose bud, lavender, apple, Jerusalem artichoke, bell pepper, bean, green pepper, cherry stalk, eggplant. Apart from these fruits and vegetables, gamma radiation levels were determined in the samples of sav soil and yalvac soil. The data obtained from the measurements were examined graphically and it was determined that the highest gamma radiation was in Jerusalem artichoke and the lowest level was in organic tomatoes. The result obtained here is that the gamma radiation in fruits and vegetables grown in soil and underground is high. Thus, this study is important because the radiation taken into our body through food can cause various diseases and hereditary disorders. The absence of a previous similar study in this field in our country will serve as a reference for similar studies to be conducted in the future.

Keywords: Gamma radiation, dried fruits and vegetables, gamma radiation levels

[a,*] Isparta University Of Applied Sciences, Technology Faculty, Dept. of Electrical Electronics Engineering 32200 - Isparta, Türkiye
Orcid: 0000-0003-4345-761X
e mail: serkanuncu@isparta.edu.tr

[b,] Isparta University Of Applied Sciences, Technology Faculty, Dept. of Electrical Electronics Engineering 32200 - Isparta, Türkiye
Orcid: 0000-0001-6804-9327

*Corresponding author: serkanuncu@isparta.edu.tr

Kurutulmuş Meyve ve Sebzelerin Gama Radyasyon Düzeylerinin Belirlenmesi ve Karşılaştırılması

ÖZ

İnsanoğlunun hayatta kalabilmesi için gıda tüketimine ihtiyacı vardır. Günümüzde yediğimiz meyve ve sebzelerin vücudumuz üzerindeki etkileri biyolojik olarak araştırılmaktadır. Ancak bu besinlerin vücudumuza aldığı radyasyonun etkisi çok iyi bilinmemektedir. Bu nedenle kurutulmuş meyve ve sebzelerin gama radyasyon düzeyinin belirlenmesi amacıyla yaklaşık sekiz ay boyunca bu kurutulmuş meyve ve sebzelerin radyasyon seviyeleri özel bir dedektörle belirlendi. Ölçümlerimiz saatlik düzeyde olduğundan saatlik 0,25 mSv/yıl değiştirdiğimizde referans değeri 2,85x10-5 mSv/h olarak alınmaktadır. Deneysel çalışmadaki kurutulmuş meyve ve sebzeler sera domatesi, organik domates, gül yaprağı, gül goncası, lavanta, elma, yer elması, dolmalık biber, fasulye, yeşil biber, kiraz sapı, patlıcandır. Bu meyve ve sebzelerin dışında sav toprağı ve yalvaç toprağı örneklerinde de gama radyasyon düzeyleri belirlendi. Ölçümlerden elde edilen veriler grafiksel olarak incelendi ve en yüksek gama radyasyonunun yer elması, en düşük seviyenin ise organik domateste olduğu belirlendi. Buradan elde edilen sonuç toprakta ve yeraltında yetişen meyve ve sebzelerde gama radyasyonunun yüksek olduğudur. Dolayısıyla gıda yoluyla vücudumuza alınan radyasyonun çeşitli hastalıklara ve kalıtsal bozukluklara neden olabilmesi nedeniyle bu çalışma önemlidir. Ülkemizde bu alanda daha önce benzer bir çalışmanın bulunmaması, gelecekte yapılacak benzer çalışmalara referans teşkil edecektir.

Anahtar Kelimeler: Gama radyasyonu, kurutulmuş meyve ve sebzeler, gama radyasyonu seviyeleri

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1. Introduction

Radioactivity is the process by which the unstable atomic nucleus undergoes spontaneous decay and becomes more stable, while emitting radiation to its surroundings in the form of particles or electromagnetic waves. The atomic nucleus that undergoes decay and emits radiation is called a radionuclide. The stability of a nucleus depends on the ratio between the neutron and the proton in the nucleus.

Generally, nuclei with an n/p ratio of less than 1.5 are stable or less stable, and nuclei larger than this value are unstable. Radionuclides with too many neutrons tend to convert a neutron into a proton in order to reach a more stable structure. Radioactivity can be natural or artificial. Figure 1 shows the path of a gamma or x-ray photon after hitting a surface. There are two reasons for using red LED light to make photosynthesis more stable and powerful. First, McCree curves show that wavelengths of red color between 600-700 nm are absorbed with high efficiency by pigments in plants; The second reason is that the most efficient color in lights is red at a wavelength of 660 nm, which is close to the highest level of chlorophyll absorption. In another study is to determine the natural radiation found in dried apricots. it has been investigated how much radiation Malatya apricot receives from nature during the growth stage and whether it is within the limits set by the International Atomic Energy Agency (IAEA) [1].

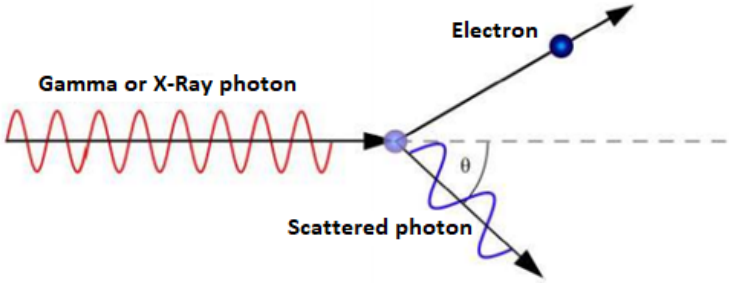

Figure 1. Gamma or X-Ray photon reflection

If the decayed radionuclide is found in nature or occurs spontaneously by the decay of other radionuclides in nature, it is called natural radioactivity. If radionuclides are produced by humans with external effects, it is called artificial radioactivity [2]. Depending on whether radiation has the ability to ionize atoms and molecules in the environment it interacts with, ionizing radiation (X-rays, γ-rays, alpha radiations, beta radiations, cosmic rays, neutrons, some of the ultraviolet) and non-ionizing radiation (infrared, radio waves, microwaves), visible light, low energy part of ultraviolet) are classified in two main categories [3]. The classification of radiation is shown in Figure 2.

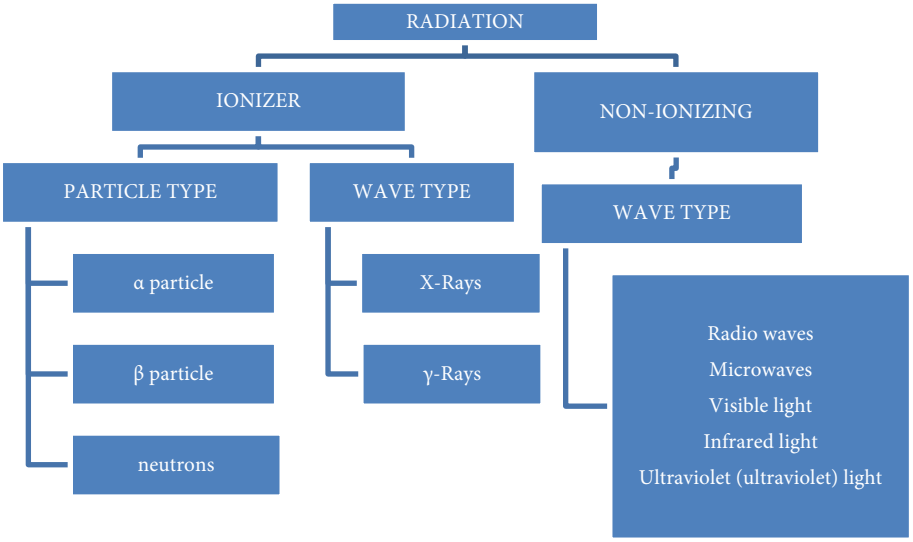

Figure 2. Classification of radiation

The unstable nucleus that emerges after neutron, alpha or beta radioactive decays in the nucleus can remain in the excited energy level and can go from the unstable state to the stable state with a second decay (by

emitting a photon). Photons emitted during this transition are called gamma rays (γ-rays). Gamma radiation, which emerges as a result of natural decay mechanisms, has energies between 0.1 and 10 MeV [4]. Three basic interactions that gamma rays can have with matter, depending on their energies, are given below (Table 1):

Table 1. Three basic interactions that gamma rays can have with matter, depending on their energies

Photoelectric Event	0.01 MeV to ~0.5 MeV
Compton Scattering from	0.1 MeV to ~10 MeV
Pair Formation starts at	1.02 MeV

Gamma rays with high penetration can enter the body directly and transfer their energy to the internal organs. Living things exposed to gamma radiation can be adversely affected. On the other hand, gamma rays, which are used in medical diagnosis and treatment such as X-rays, are armored with high-density materials such as lead and barite concrete. Naturally sourced γ-rays, which have the energy to pass through a few centimeters of lead, indirectly ionize the environment they are in.

Considering the distribution of natural radiation sources among themselves; It can be said that cosmic rays contribute to the natural radioactivity at the level of 0.39 mSv/year, gamma radiation at the level of 0.46 mSv/year, radon at the level of 1.30 mSv/year, and food and intrabody irradiation at the level of 0.25 mSv/year [5]. Since our study subject is gamma radiation in vegetables and fruits, this is an example of radiation exposure with intra-body irradiation. Therefore, the 0.25 mSv/year radiation level will be our reference level [6].

2. Materials and Methods

2.1. Importance and characteristics

Technical specifications of the device used: ASM-990 series; They are easy-to-use devices that detect alpha, beta, gamma, neutron or x-ray radiation, with an operating range of 1 µR/hr to 1 R/hr or 1 to 5000000. It can measure different types of radiation depending on the probe selection. The results of the measured values and selectable parameters are instantly displayed on the analog/digital display.

With the probes of the device, it can work with Geiger-Mueller (GM) detectors, neutron probes, proportional counters and scintillation sensors between 500-1300 volts. The ASM-990 is used in health physics, medical physics and testing applications. Radiation safety officers (RSO), nuclear medicine laboratories, diagnostic x-ray and hospital emergency technicians and health physicists determine the radiation level instantly. Figure 3 shows the ASM-990 and the Geiger Müller device.

Figure 3. ASM-990-GM Probe (Model 489-110D)

The LCD screen on the device shows the digitized average of the graphic value. The length of the screen on the device is 5.6 cm. Measurement results range from 0.0001 to 1 million depending on the probe selected and the units activated. In addition, the LCD screen displays selected units of measurement, status icons and real-time clock. The error rate in the standard deviation is 10%. The temperature ranges from -10 °C to +50 °C'. Relative humidity is between 0% and 95%. After 5 seconds, it can report the value of the measured item. It can measure 150 hours with existing batteries. The measurement units of the measuring device are shown in Figure 4. The units in the red lines are the units used in our preliminary study and show the units that we will continue to measure from now on.

µR/hr	mR/hr	R/hr
µrem/hr	mrem/hr	rem/hr
µSv/hr	mSv/hr	Sv/hr
CPM	CPS	
DPM ^{99m}Tc	DPS ^{131}I	
Bq ^{125}I	kBq ^{123}I	MBq ^{201}Tl
µCi ^{67}Ga	mCi ^{18}F	Ci ^{57}Co

µR	mR	R
µrem	mrem	rem
µSv	mSv	Sv
C (counts)	kC	MC
D (disintigrations)	kD ^{99m}Tc	MC ^{131}I

Figure 4. Unity values of the device in radiation measurement

2.2. Experimental procedure

With the ASM-990 detector, a total of 252000 measurements of 350 hours were carried out from dried greenhouse tomatoes, organic tomatoes, rose petals, rose buds, lavender and apple samples. When the average of the measurements was taken, it was seen that the greenhouse tomato had more gamma radiation than the organic tomato. The gamma dose level of the greenhouse tomato was found to be 140 nSv/h, and the gamma dose level of the organic tomato was found to be 72 nSv/h. The average gamma radiation level of rose petal was found to be approximately 128 nSv/h, that of rose bud 108 nSv/h, that of lavender 81 nSv/h, and that of apple 70 nSv/h. UNSCEAR reports that the indoor gamma dose rate level is 84 nGy/hr and the average absorbed gamma dose rate in outdoor air is 59 nGy/hr worldwide. Serving within the body of the Turkish Atomic Energy Agency (TAEK), RESA shares the data obtained with the European Radiological Data Exchange Platform. According to RESA data between January 1st and March 25th, 2016, Turkey's average outdoor gamma dose rate was reported as 92 nSv/hour. When these values are considered, it is seen that greenhouse tomato, rose leaf and rose bud are above these values. Lavender and apple were found to be close to the Turkey average. It is the evaluation of the graphical analysis of dried fruits whose gamma radiation level is examined and examined as the change of gamma dose levels according to the hour [7-9].
When measuring dried fruits and vegetables, the humidity and temperature of the environment is an important parameter. Therefore, the humidity and temperature of the environment were measured using the Raspberry Pi shown in Figure 5. To establish this circuit, Raspberry Pi (1), Breadboard (1), DHT11 Temperature and Humidity Sensor (1), 10kΩ resistor (1) and three Jumper cables (3 female-male) are used [10-11].

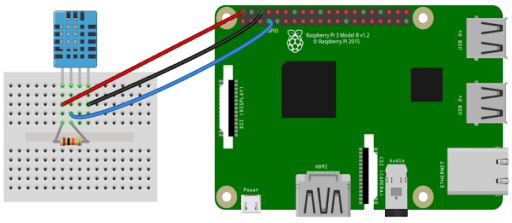

Figure 5. Raspberry Pi with DHT11 Integrated

Humidity and temperature values were measured using this circuit. There are codes that allow reading of humidity and temperature values from this system. The humidity and temperature values of the environment are important when determining the radiation level. Radiation varies according to humidity and temperature level. While measuring the gamma radiation levels in dried fruits, they were also analyzed together with the humidity and temperature values of the environment. In Figure 5., the humidity-temperature measurements of the environment were made with the integrated system installed using the humidity-temperature sensor and pressure sensor together with the Raspberry Pi. While looking at the gamma radiation level of dried fruits, the humidity and temperature values of the environment were also measured in the same hour and minute. It is thought that our system will continue to measure dried fruits until the final thesis period, and by taking more measurements, our experiments will be completed with an article study [11-13].

Asm-990 Radiation measuring device can measure alpha, beta and gamma radiation levels with its probes. The display of the ASM-990 device produced by the Fluke Biomedical company, which we determined the gamma radiation levels in dried fruits and vegetables that we have made and will continue to do, together

with the samples measured, is as in Figure 6.

Figure 6. Device and measurement samples

2.3. Findings and discussion

Figure 7 and figure 8 show a graphical study showing the gamma radiation level of organic tomatoes, greenhouse tomatoes.

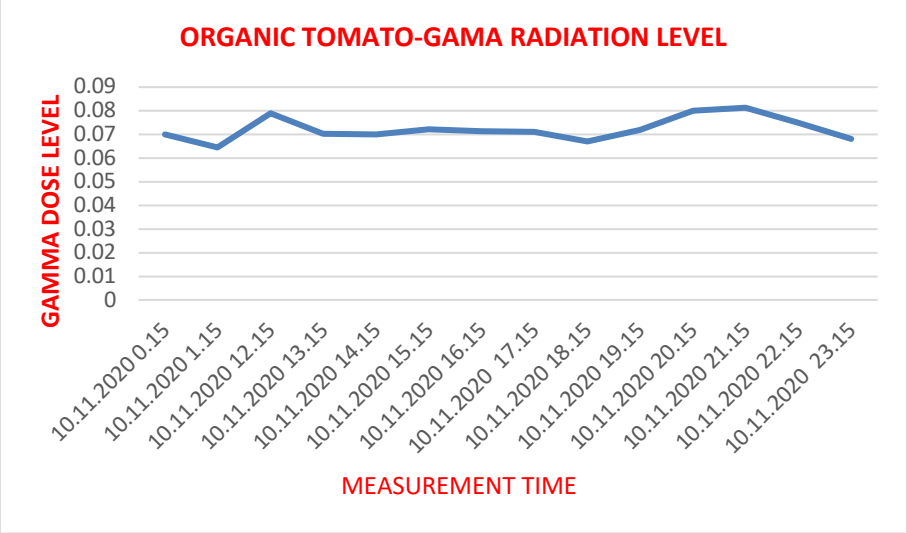

Figure 7. Hourly variation of gamma dose level of organic tomato

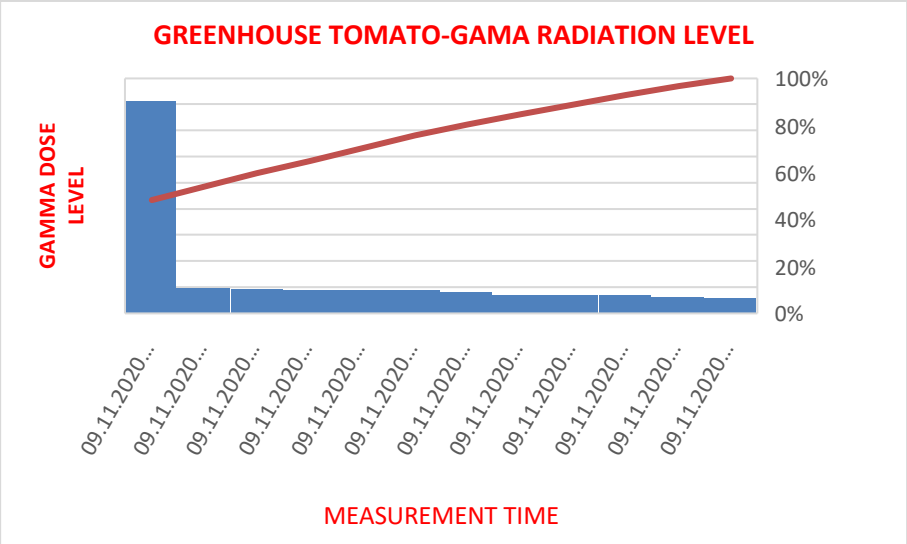

Figure 8. Hourly variation of gamma dose level of greenhouse tomato

The average of the gamma dose level of the greenhouse tomato was found to be $1.4x10^{-4}$ mSv/h (4.9 times higher than the reference value), while the average of the gamma dose level of the organic tomato was $7.2x10^{5}$ mSv/h (2.6 times higher than the reference value) was found. If we look at these two graphs, we can see that the greenhouse tomato has a much higher gamma radiation level than the organic tomato. As it can be understood from this analysis, organic tomatoes are seen as healthy in terms of radiation.

Figure 9 and figure 10 show a graphical study showing the gamma radiation level of the rose petal and the humidity-temperature values during the measurement.

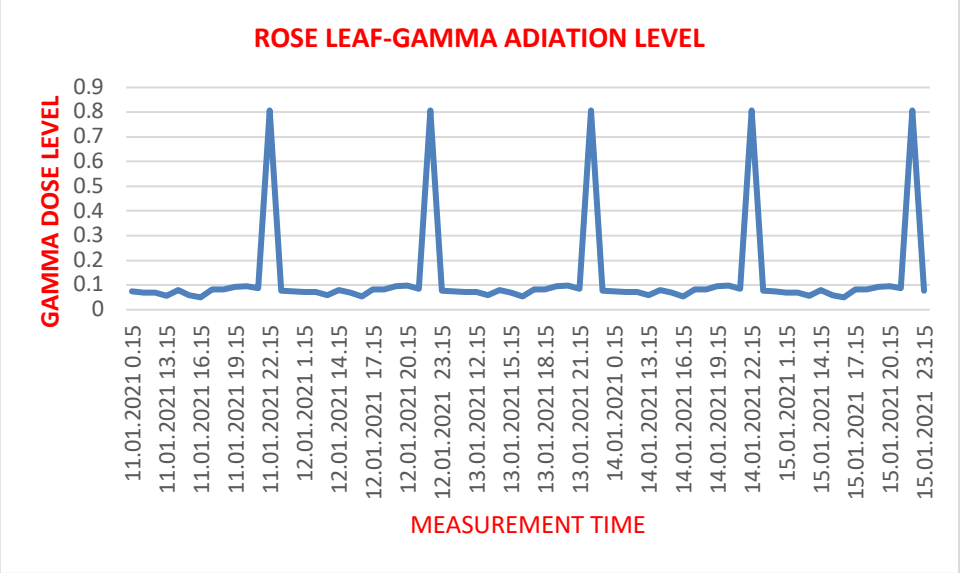

Figure 9. Gamma radiation level of Rose Petal

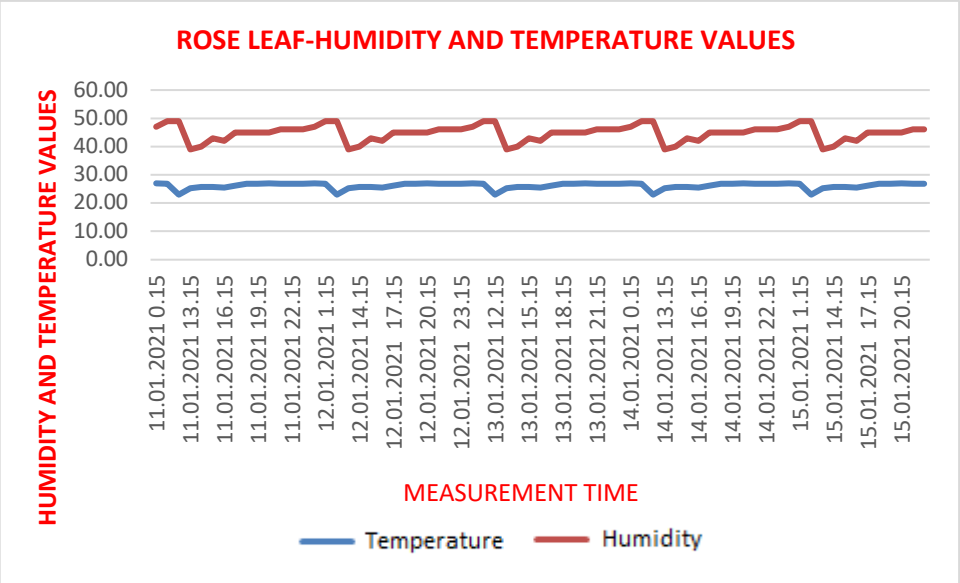

Figure 10. Humidity and Temperature Values of Rose Petals

Figure 11 and figure 12 show a graphical study showing the gamma radiation level and humidity-temperature values during the measurement of rose buds.

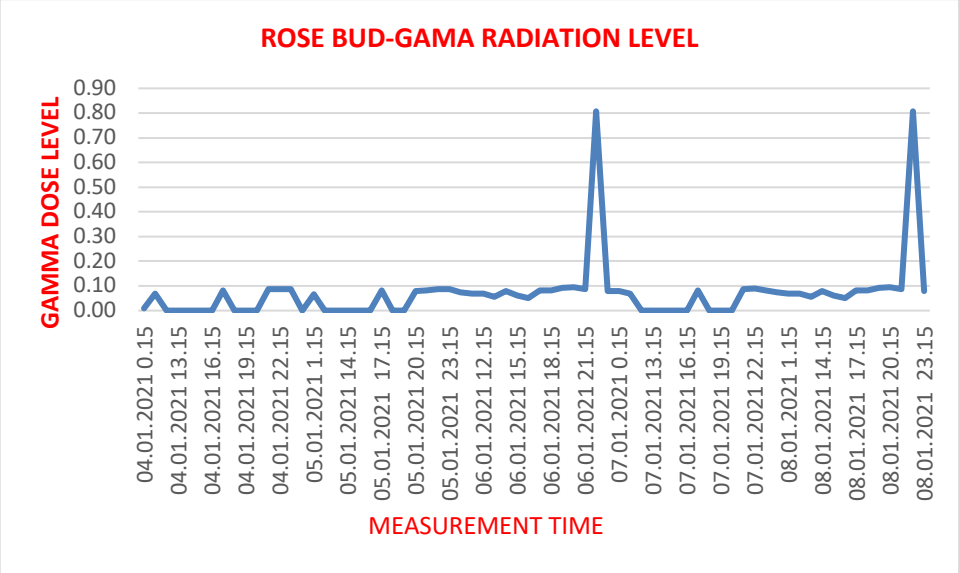

Figure 11. Gamma radiation level of rose bud

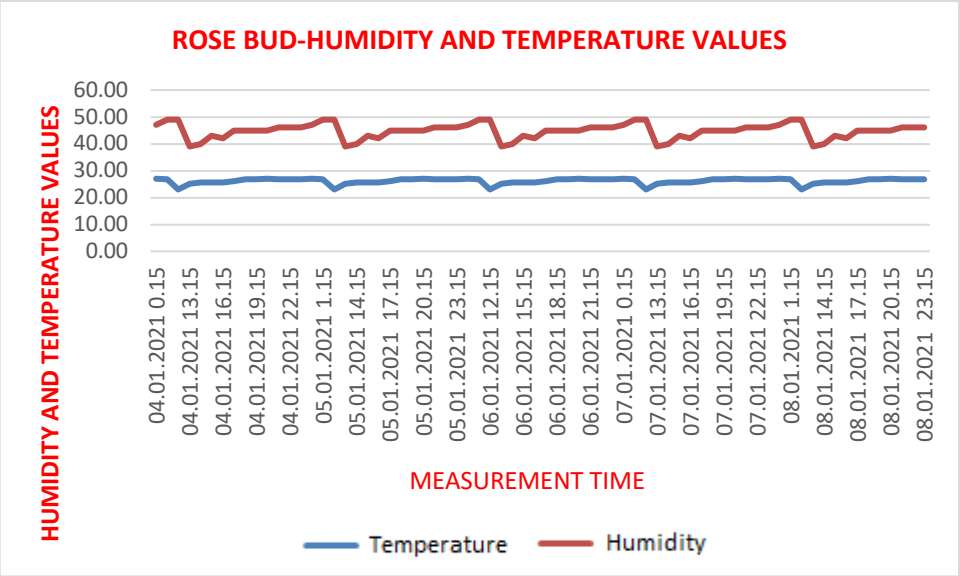

Figure 12. Humidity and temperature values of rose buds

The history of the rose is at least as old as the history of humanity. The place and importance of the rose flower in human history is truly magnificent. In every period of history, the rose has attracted the attention of humanity and has become the favorite and the envoy of queens, sultans and rulers. Isparta is the first in the world in rose cultivation. Due to this situation, many products are obtained from the rose, which is an important source of livelihood in the region. At the beginning of these are foods such as rose water, rose jam, rose sherbet. In addition, important cosmetic products are obtained from roses. These are; Shampoo, cream, perfume, essence, oil and soap are products that people prefer personally. These products enter our body as food or as contact. It is very important to determine the radiation level of the rose, which the people of the region use almost from many sources. The results of rose petals and rose buds show that the rose bud has a much lower radiation level than the rose petal.

Figure 13 and Figure 14 show a graphical study showing the gamma radiation level of the lavender flower and the humidity-temperature values during the measurement.

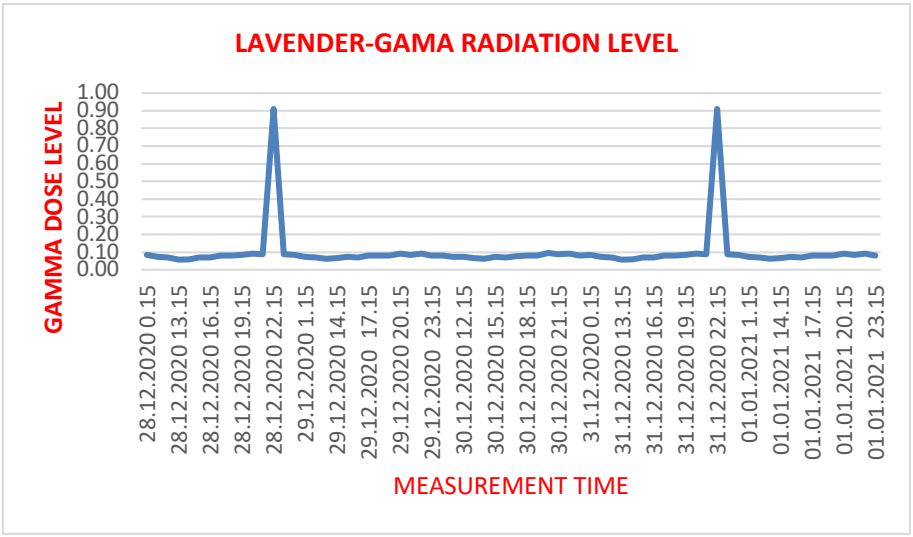

Figure 13. Gamma radiation level of lavender

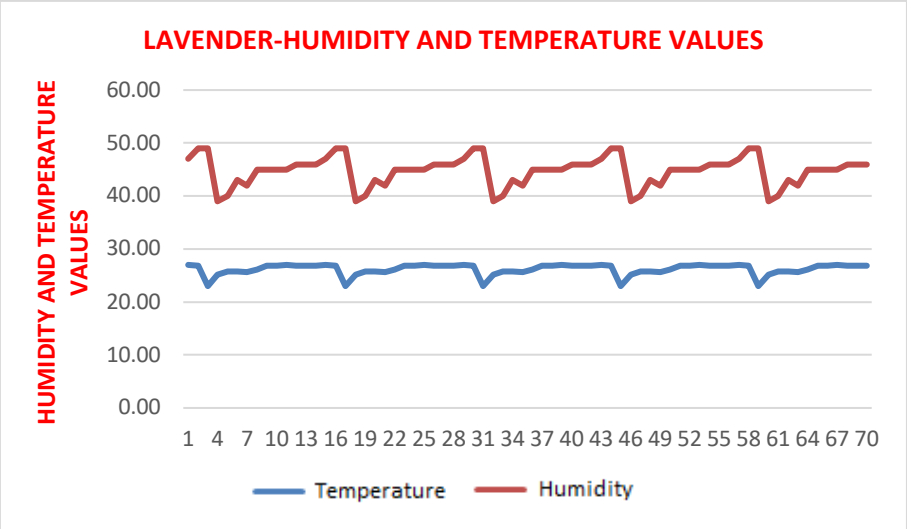

Figure 14. Humidity and temperature values of lavender

Lavender is the common name of plant species of Mediterranean origin that make up the genus Lavandula from the Lamiaceae family. Members of the lavender genus, which grow in a wide area from the islands of the Atlantic Ocean to the countries around the Mediterranean and to India, are plants with bush-like appearance and blooming blue, purplish or red flowers in the form of massive spikes. Lavender grows in the mountains at altitudes between 1000-1800 m. The flowers, which are dried and put in the cabinets, protect the clothes from insects. The essence used in dyeing is obtained from the English lavender (Lavandula angustifolia) species that grows at approximately 500 meters. Blackhead (Lavandula stoechas) flowers, which grow in the scrub regions of Western Anatolia, are used as a pain reliever and expectorant. The gamma radiation level of lavender, which is widely consumed and used, was measured as $8.1x10^{-5}$ mSv/h (2.8 times higher than the reference value).

Figure 15 and figure 16 show a graphical study showing the apple's gamma radiation level and humidity-temperature values during measurement.

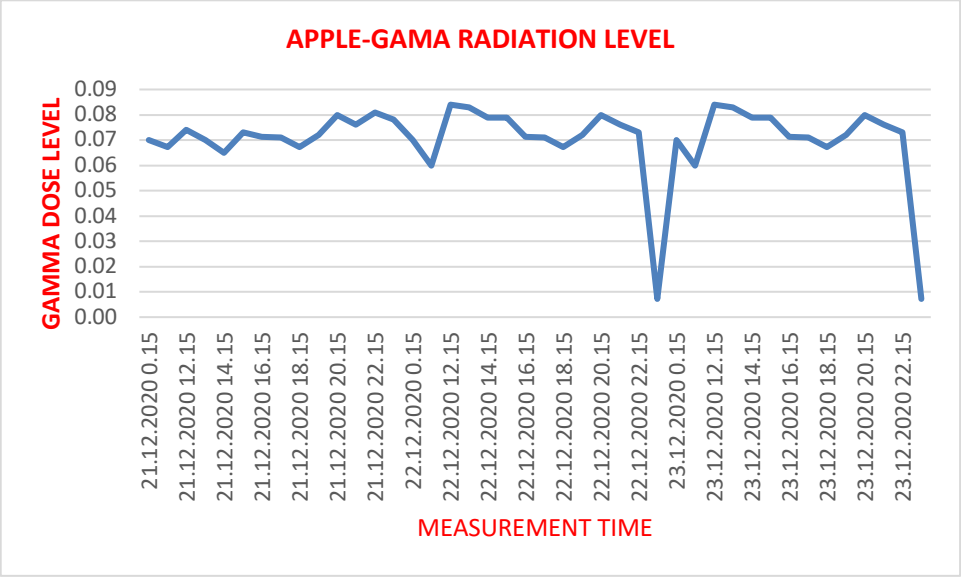

Figure 15. Gamma radiation level of apple

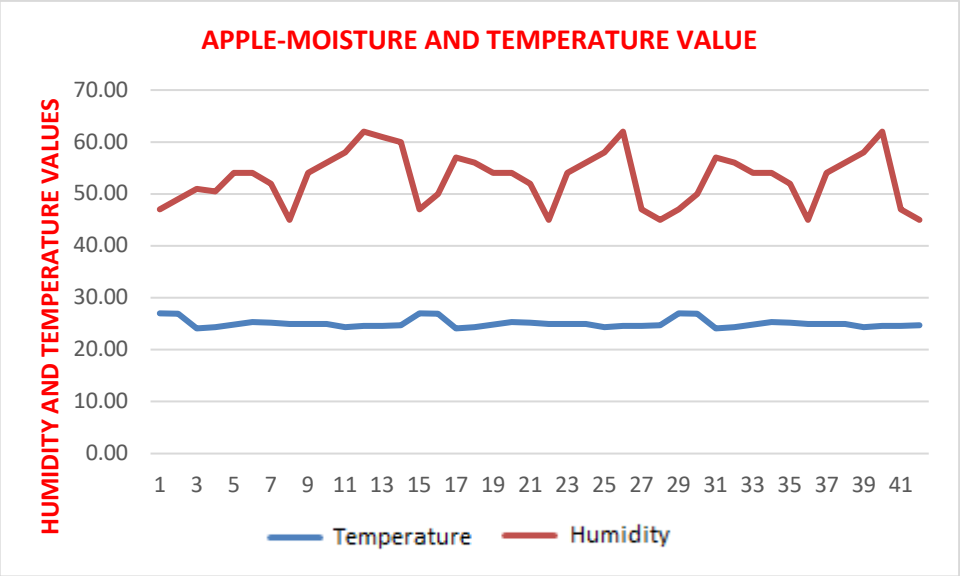

Figure 16. Humidity and temperature values of apples

Apple is a type of fruit grown from the Rosaceae family. It is known that the name known as "alma" in Old Turkish comes from the word "al" (red), which is the color of the fruit. It is thought that the apple first appeared in Northern Anatolia, the Southern Caucasus, regions in the southwestern part of Russia, and around Central Asia (east of Kazakhstan). The species has spread all over the world from Central Asia. It has a very high nutritional value. The gamma radiation level of the apple, which is consumed too much, was found to be $7x10^{-5}$ mSv/h (2.4 times more than the reference value).

Figure 17 and figure 18 show a graphical study showing the gamma radiation level and humidity-temperature values during the measurement of the Jerusalem artichoke.

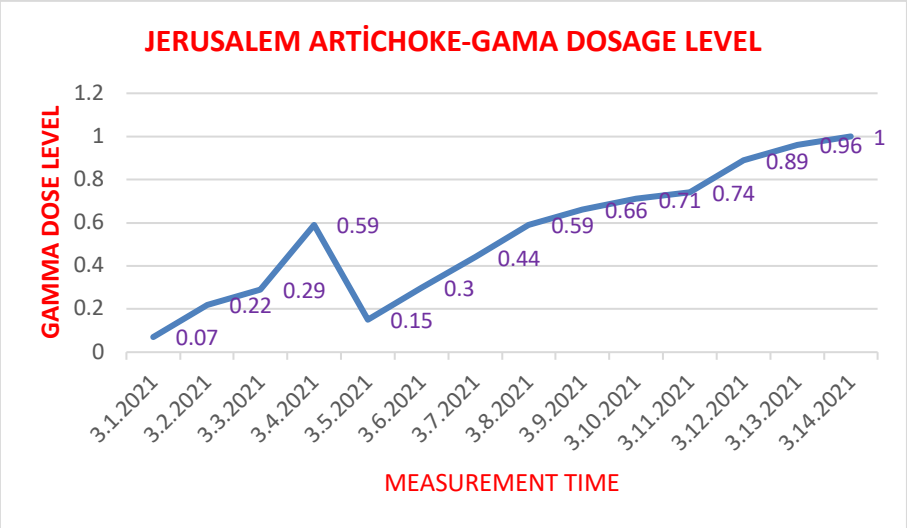

Figure 17. Gamma dose level of Jerusalem artichoke

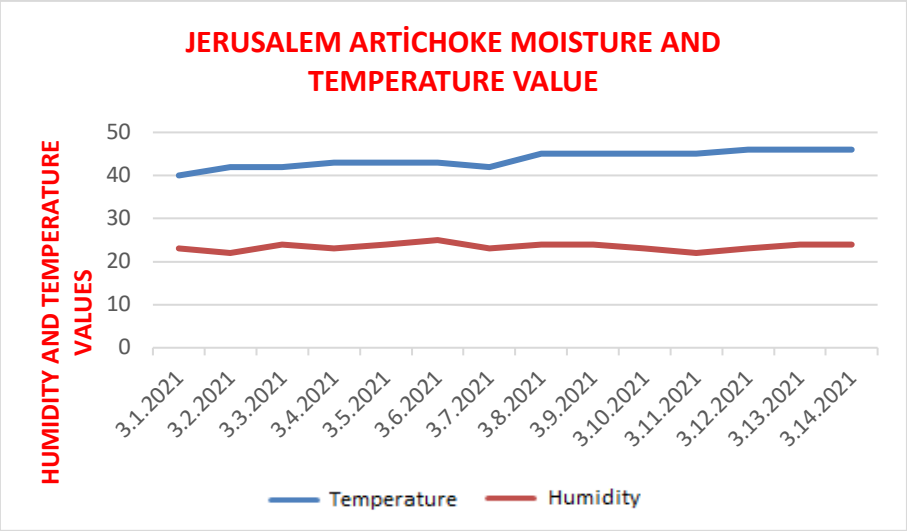

Figure 18. Humidity and temperature variation of Jerusalem artichoke

The average of the gamma dose level of the Jerusalem artichoke is 19 times higher than the reference value and has the highest radiation level among all measurements. This product is consumed a lot by people who eat vegetarian. Due to this situation, it is reported by the World Health Organization that the radiation that will be taken into our body due to Jerusalem artichoke may cause mutations over time and cause many types of cancer.

Figure 19 and figure 20 show a graphical study showing the gamma radiation level of the soil and the humidity-temperature values during the measurement.

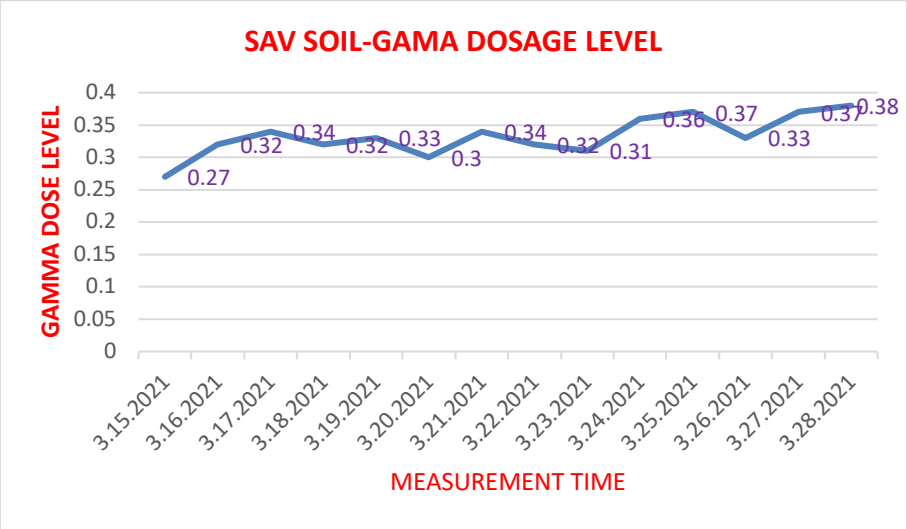

Figure 19. Gamma dose level of Sav soil

Sav is a town in the central district of Isparta. It is located on the Isparta-Antalya road. The name of the town before 2020 was Savköy (Wikipedia-2021). The geological units in the Isparta plain, where the city is established, are autochthonous and allochthonous. The geological unit belonging to the city center is; It is an alluvium consisting of clay, silt, sand and gravel. The origins of travertine in this alluvial unit are composed of tuffite, pumice, tuff and volcanic rocks. By looking at the gamma radiation of the soil here, the average of the gamma dose level of the savory soil was found to be 3.33×10^{-4} mSv/h (11.7 times higher than the reference value).

Figure 21 shows the graphic analysis showing the gamma radiation level of Yalvaç soil. The average moisture value of the soil measured in temperature and humidity values is 45%, and the average temperature value is 23 °C.

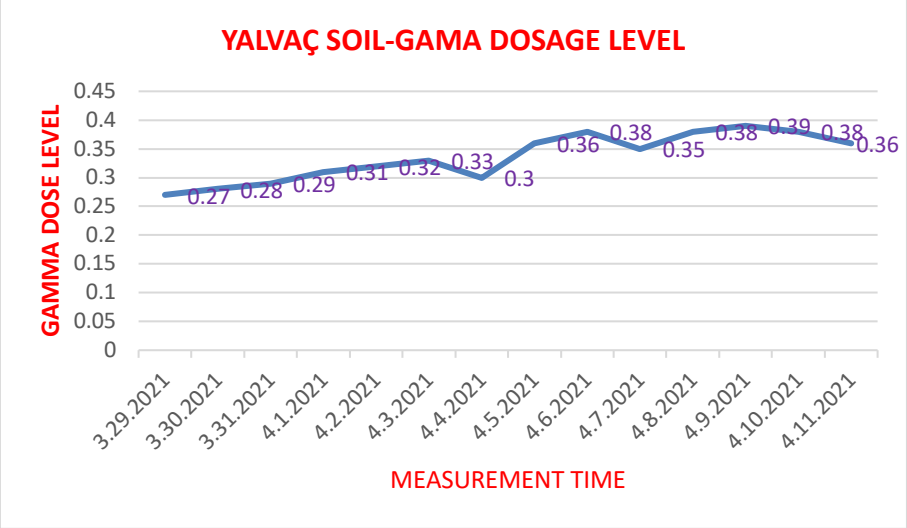

Figure 20.Gamma dose level of Yalvaç soil

Yalvaç is a district of Isparta province. The district is a very old settlement. As a result of the researches carried out in Yalvaç, the history of the settlement dates back to the Late Neolithic period and the Chalcolithic Age. Since Yalvaç has a very old settlement, it is thought that it would be important to examine the gamma dose level of the soil sample here.

Due to this situation, the gamma dose level of the soil here was examined and its average was found to be $3.36x10^{-4}$ mSv/h (11.8 times higher than the reference value).Figure 21 shows the graphic analysis showing the gamma radiation level of bell pepper. The average moisture value of the soil measured in temperature and humidity values is 48%, and the average temperature value is 22 °C.

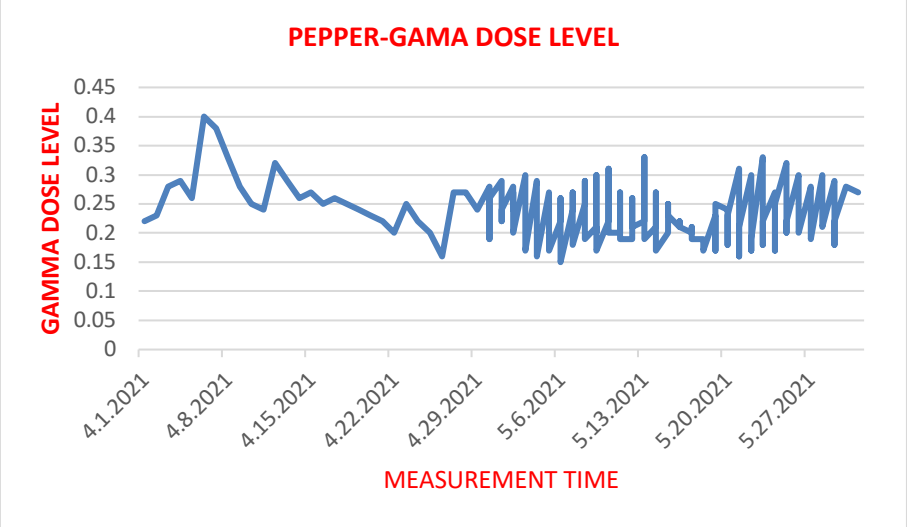

Figure 21. Gamma dose level of bell pepper

The homeland of pepper is the Americas. The first pepper cultivation in history BC. It is known that it was made in 7500 BC and is among the first plant species grown in America, and the pepper culture spread rapidly from America to Europe and from there to China and India. It is very important to determine the level of radiation taken into our body from pepper, which is consumed too much in Turkey. It is obvious how much more radiation level can be obtained when the gamma dose level of bell pepper is found to be $2.36x10^{-4}$ mSv/h (8.28 times higher than the reference value).

Figure 22 and Figure 23 show a graphical study showing the bean's gamma radiation level and humidity-temperature values during measurement.

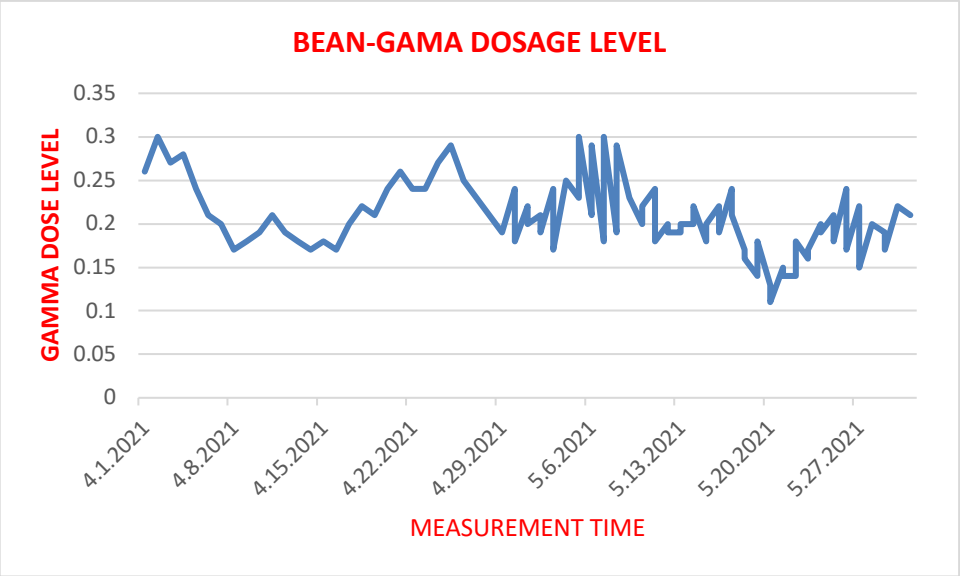

Figure 22. Bean gamma dose level

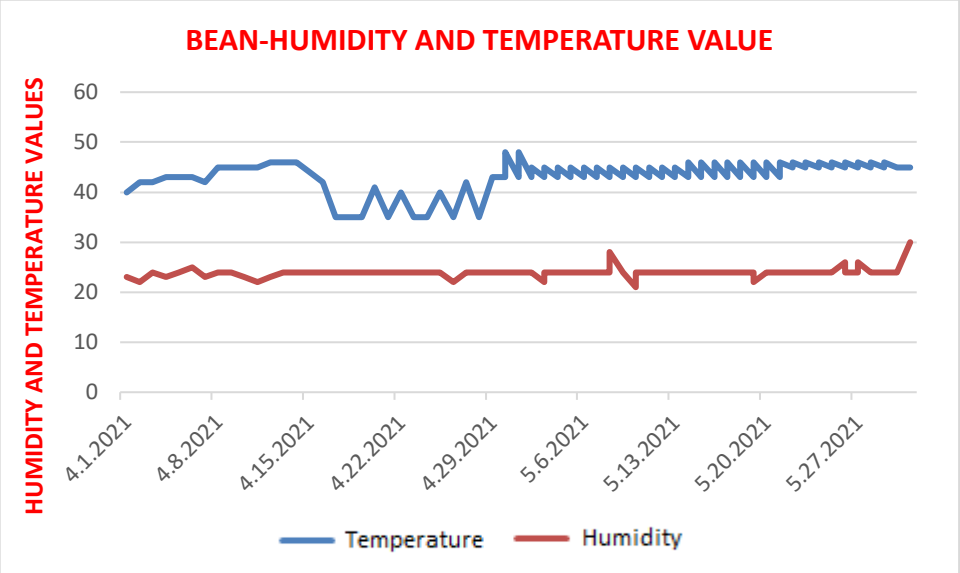

Figure 23. Moisture and temperature variation of beans

Bean (Phaseolus vulgaris) is an annual herbaceous plant originating from the genus Phaseolus of the legumes (Fabaceae) family, originating in Central America. Today, beans; It has been reported by various researchers that it has two gene pools, namely Central America (Mesoamerica) and South America (Andean) regions. In Turkey, juicy dishes are made as fresh and dried beans, and it is one of the most important vegetables of the Mediterranean table, used in salad making. The amount of radiation received by the bean, which is consumed too much, by intra-body irradiation is important. Therefore, by looking at the gamma radiation level of dried beans, it was found to be 2.1×10^{-4} mSv/h (7.36 times more than the reference value).

Figure 24 shows the graphic analysis showing the gamma radiation level of pepper. The average moisture value of the soil measured in temperature and humidity values is 44%, and the average temperature value is 20 °C.

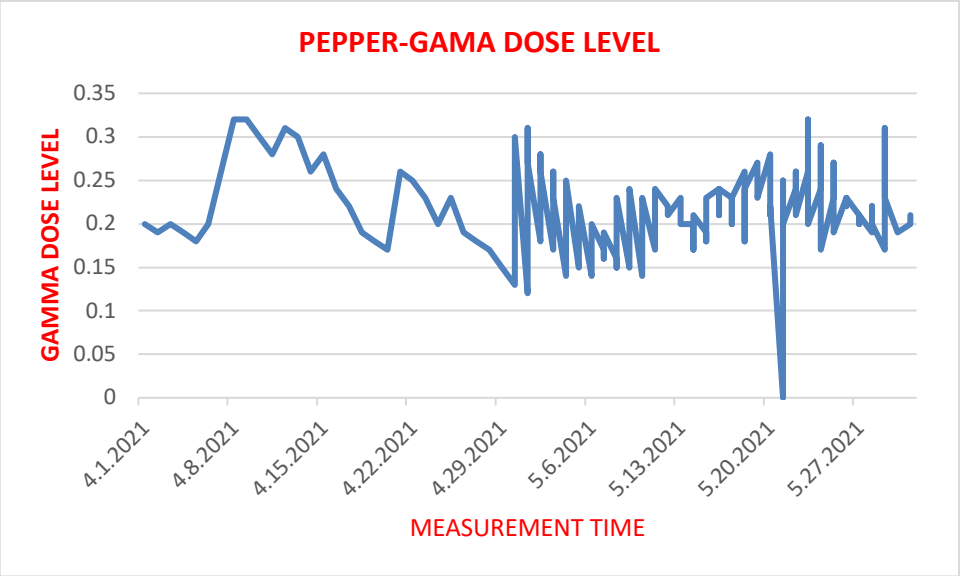

Figure 24. Gamma dose level of black pepper

Hot pepper is the name given to different types of peppers with a hot taste. The long ones are called pointed and the smaller ones are called gin peppers. It is of American origin. It is used as a food and medicine material all over the world. Capsicum has been part of the human diet in America since 7500 BC. With the arrival of Europeans in America, it spread first in Spain and Portugal, then all over Europe and the world. By investigating the radiation level obtained from this product consumed on our tables, a gamma dose level of $2.2x10^{-4}$ mSv/h (7.7 times higher than the reference value) was obtained as a result of experimental studies. Attention should be paid to the consumption of these products, which are 7.7 times higher than the reference value.

Figure 25 and figure 26 show a graphical study showing the radiation level of the cherry stem and the humidity-temperature values during the measurement.

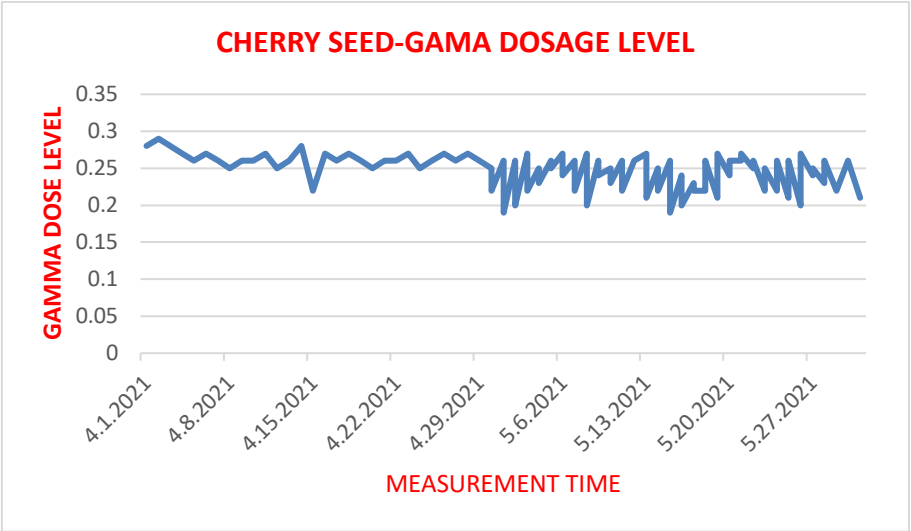

Figure 25. Gamma dose level of cherry stem

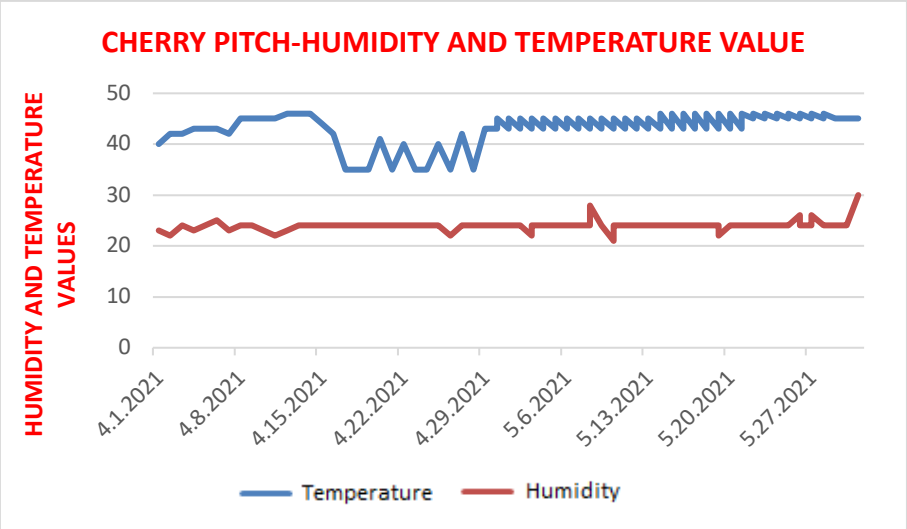

Figure 26. Humidity and temperature variation of cherry stalk

The homeland of the cherry, which is from the Rosaceae family, is the South Caucasus and North Anatolian lands. It is produced mostly in Aegean and Marmara Regions in Turkey. It is usually used plain or in desserts. It is especially recommended for children in developmental age and anemia patients, as it increases blood cells. Cherry stalk, which has attracted a lot of attention recently, is used in tea, water and cosmetic masks. The gamma radiation level taken into the body from this plant, which has so many uses, was found to be $2.5x10^{-4}$ mSv/h (8.8 times higher than the reference value).

Figure 27 and figure 28 show a graphical study showing the radiation level of eggplant and the humidity-temperature values during measurement.

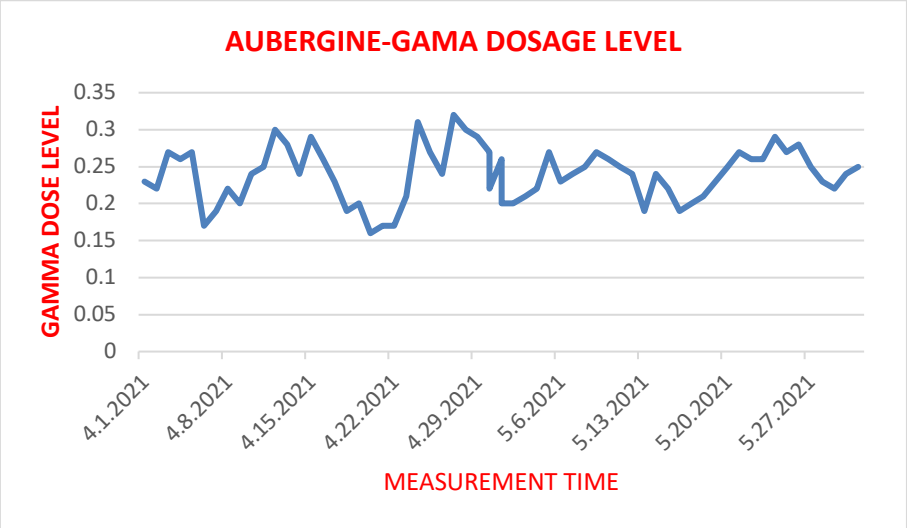

Figure 27. Gamma dose level of aubergine

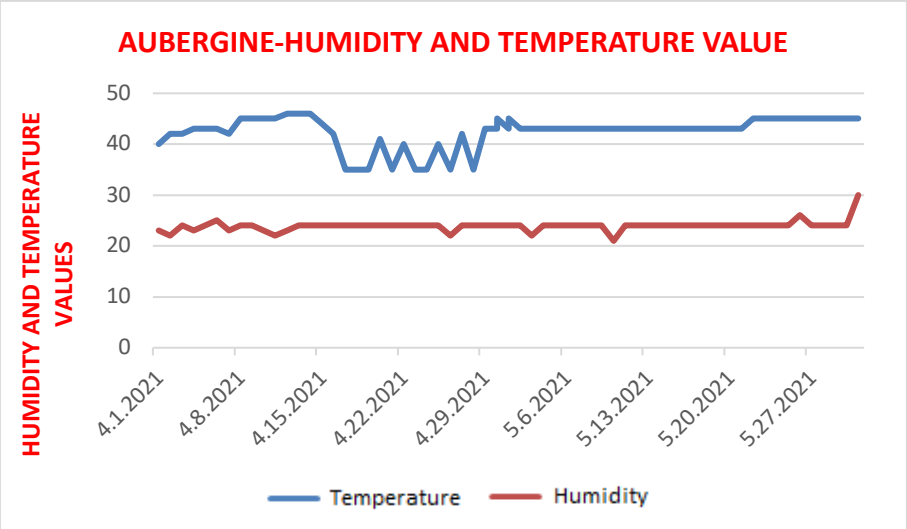

Figure 28. Humidity and temperature change in eggplant

Eggplant is a perennial variety that belongs to the Solanaceae family and grows as an annual in temperate climates and as a small tree in tropical climates. The first cultivation of eggplant was carried out in India in the 5th century BC. After this date, it was brought to Africa, then to the Eastern Mediterranean and Europe. It was brought to Europe by the Spanish in the 16th century. Eggplant, which was used as an ornamental plant when it was first brought to Europe, ranks 6th in the world among the fresh vegetables produced. Humans are the only living creatures that consume eggplant due to its low nicotine content. While it is a perennial plant in the tropics, it is an annual in climatic zones outside this zone.

In Turkey, it is mostly consumed in the form of imambayildi, karniyarık dishes and fries. Salad is also made. Radiation examination of the eggplant, which has a high consumption, was performed and the measurement result was obtained as 2,4x10^{-4} mSv/h (9.6 times more than the reference value).

Our experimental studies were carried out together with the graphical analysis of the hourly variation of gamma dose levels. According to these measured results, the change in gamma dose levels may vary according to the temperature, humidity and amount of ventilation of the environment.

3. Discussion and Conclusion

We stated that the gamma dose level of food and intrabody irradiation is 0.25 mSv/year. Since our measurements are hourly, when we change 0.25 mSv/year hourly, it becomes 2.85x10^{-5} mSv/h. Thus, the studies we have done show that the gamma dose level that we take into the body and that we are exposed to from the soil is much higher than this reference value. The average of the measurement results is as follows:

The average of the gamma dose level of the greenhouse tomato was found to be 1.4x10^{-4} mSv/h (4.9 times higher than the reference value), while the average of the gamma dose level of the organic tomato was 7.2x10^{-5} mSv/h (2.6 times higher than the reference value) was found.

Average gamma dose level of rose petal is approximately 1.28x10^{-4} mSv/h (4.5 times higher than reference value), rose bud 1.08 x10^{-4} mSv/h (3.8 times higher than reference value), lavender 8, It was found to be 1x10^{-5} mSv/h (2.8 times more than the reference value), while that of apples was 7x10^{-5} mSv/h (2.4 times more than the reference value).

The average gamma dose level of Jerusalem artichoke is 5.44x10^{-4} mSv/h (19 times more than the reference value), the gamma dose level of the savanna soil is 3.33x10^{-4} mSv/h (11.7 times more than the reference value), the gamma dose level of the yalvaç soil mean level was found to be 3.36x10^{-4} mSv/h (11.8 times higher than the reference value). The gamma dose level of bell pepper is 2.36x10^{-4} mSv/h (8.28 times more than the reference value), 2.1x10^{-4} mSv/h of beans (7.36 times more than the reference value), 2.2x10^{-4} mSv of green pepper /h (7.7 times more than reference value), 2.5x10^{-4} mSv/h of cherry stem (8.8 times more than reference value), 2,4x10^{-4} mSv/h (9.6 times more than reference value) of eggplant The mean gamma dose levels were

measured. It is an important issue to note that all measured values are many times higher than the reference value, and it is an important issue to note that the Jerusalem artichoke has the highest gamma radiation average. It is noteworthy that the reference value is high in the measurements of products grown underground.

The fact that the fruits and vegetables we eat in order to maintain our daily life are exposed to too much radiation when we take them into the body and the possible diseasis reveals how much human health is threatened.

The absence of a similar study in this field in our country will serve as a reference for similar studies to be conducted in the future.

Conflict of Interest Statement

Authors of this paper state that there is no conflict of interest.

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