Ref. Ares(2026)1452328 - 09/02/2026

PRODUCT SPECIFICATION

1.1. Name

‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’

1.2. Description of the agricultural product or foodstuff

‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’ is a fermented dairy product produced from the milk separated after the production of Afyon clotted cream, which is produced from the milk of Anatolian buffalos grown in Afyonkarahisar province (Figure 1). After the clotted cream layer is removed from the surface of the milk during production, the remaining milk is used in the production of ‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’ .



Figure 1. *‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’* .

One of the features that distinguishes 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' from other yoghurts is the use of Anatolian buffalo milk, which is known with its high fat, protein, and dry matter content. However, the majority of the fat is transferred to the clotted cream, leaving a milk with a lower fat but high protein content. Afyon buffalo milk generally contains around 7% of milk fat; after the production of clotted cream, the remaining milk, which is used for 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' contains 3.0-3.5% milk fat. This change in the fat-to-protein ratio is reflected in the composition of the ‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu,’ which yields a product with lower fat but the same protein content as buffalo milk. (Table 1).

Tablo 1*. The gross composition of ‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’*

Composition	**Minimum**	**Maksimum**
Total solids (%)	15,0	15,8
Non-fat dry matter (%)	11,4	12,6
Protein (%)	5,0	5,4
Fat (%)	3,2	3,9
Titratable acidity as lactic acid (%)	0,16	0,19
pH	4,20	4,90
Whey syneresis (mL/25 g yoghurt)	5,5	7,1

‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’ has a distinctive taste and smell stemming from milk type, composition, and production technique. A yoghurt aroma with a waxy and sweet note characterizes it. Use of poppy seed cake in the ratio and the long heating duration during clotted cream production enhances the waxy aroma and sweet note. High amounts of acetic acid, ethyl acetate, hexanoic acid, octanoic acid, 3-hydroxy-2-butanone, dodecane, acetaldehyde, 2-nonanone, ethanol, 3-methyl-1-butanol, 2-heptanone, phenylethyl alcohol arising from fermentation contribute to characteristic yoghurt flavour (Table 2). Additionally, lactic acid fermentation yields acidic taste.

Tablo 2. *Volatile composition of ‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’ (n=10)*[1]

			%	
	Compounds	CAS	Minimum	Maksimum
1	Acetaldehyde	75-04-4	1,44	4,63
2	2-propanone	67-64-1	0,43	1,78
3	Ethylacetate	141-78-6	1,45	20,59
4	2-butanone	78-93-3	1,78	1,92
5	3-metylbutanal	590-86-3	0,55	0,57
6	Ethanol	64-17-5	0,53	6,66
7	2,3-butanedione	431-03-8	0,16	1,01
8	2-pentanone	107-87-9	0,64	0,97
9	Decane	124-18-5	0,39	3,42
10	2,3-pentanedione	600-14-6	0,22	1,06
11	Undecane	1120-21-4	0,3	10,28
12	Dodedecane	112-40-3	0,46	13,09
13	2-heptanone	110-43-0	0,49	6,57
14	3-methyl-2-butenal	107-86-8	0,48	0,86
15	3-methyl-1-butanol	123-51-3	0,7	3,64
16	Tridecane	629-50-5	0,22	6,08
17	3-hydroxy-2-butanone	75-04-4	2,85	8,25
18	3-hydroxy-2-pentanone	67-64-1	0,27	0,53
19	2-nonanone	141-78-6	0,84	9,71
20	Tetradecane	110-62-3	0,33	1,08
21	Aceetic asid	590-86-3	7,09	17,78
22	2-ethyl-1-hexanol	64-17-5	0,42	1,07
23	Formic asit	107-87-9	0,13	2,72
24	Benzaldehyde	124-18-5	0,31	1,18
25	2-undecanone	108-88-3	0,45	3,9
26	Butanoic asi	600-14-6	0,53	1,81
27	Phenylacetaldehyde	589-38-8	0,10	1,03
28	Pentanoic asid	1120-21-4	0,97	1,65
29	2-tridecanone	138-86-3	0,61	1,28
30	Pheynlacetate	112-40-3	0,57	2,69
31	Hexanoic acid	110-43-0	3,07	9,32
32	Phenylethyl alcohol	107-86-8	1,89	2,6
33	Octanoic acid	123-51-3	2,26	8,69
34	Nonanoic acid	99-85-4	0,57	0,96
35	delta-decalaktone	71-41-0	0,42	0,43
36	Decanoic asid	100-42-5	0,52	1,2
37	Benzoic acid	629-50-5	0,06	0,21
38	Phytalic acid, isobutyl octyl ester	124-13-0	0,95	2,5

The fat-to-protein ratio in Anatolian Buffalo milk (*ca.* 1,4) decreases dramatically (*ca.* 0,6) in the milk remaining after clotted cream production. This change in the fat-to-protein ratio results in 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' to posseses a homogenous structure with a limited whey syneresis, high firmness, consistency, and cohesiveness. According to the compression test as shown in Table 3, the firmness, consistency, and cohesiveness values are 473.9 ± 26,91 g, 10573.3 ± 590.95 g.s,, and-283 .8 ± 46.05 g, respectively. Due to its composition and texture, 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' feels creamy and smooth in the mouth, with more consistency and adhesiveness than other yogurts when compressed between a tongue and palate.

Tablo 3. *Some textural properties of 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu'* .

Properties	**Values**
Firmness (g)	473,9 ± 26,91
Consistensy (g.s)	10573,3 ± 590,95
Cohesivness (g)	-283,8 ± 46,05

'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' has a bright white colour in all seasons. However, yoghurts produced from the milk of other animals vary in colour from white to cream depending on the feeding regime and the season. This is because the buffalos metabolize carotene-like pigments into vitamin A, which is colourless. As can be seen in Table 4, 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu s average lightness value (*L**) is around 93,7±0,45, average chroma (*C**) value is 93,9±0,39, and the average Hue angle is 0,48±0,175.

Tablo 4*. Some colour properties of 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu'.*

Colour Properties	**Values**
L (Lightness)*	93,7±0,45
a (+a, red; -a, green*)	-6 ± 1,50
b(+b, yellow; -b, blue*	12,8±1,23
Chroma	93,9±0,39
Hue angle	0,48±0,175

1.3. Definition of the geographical area

'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' is produced within the borders of Afyonkarahisar province (Figure 3). Afyonkarahisar is located on the southwestern edge of the plain of the same name in the Central Western Anatolia Section of the Aegean Region (Figure 2).

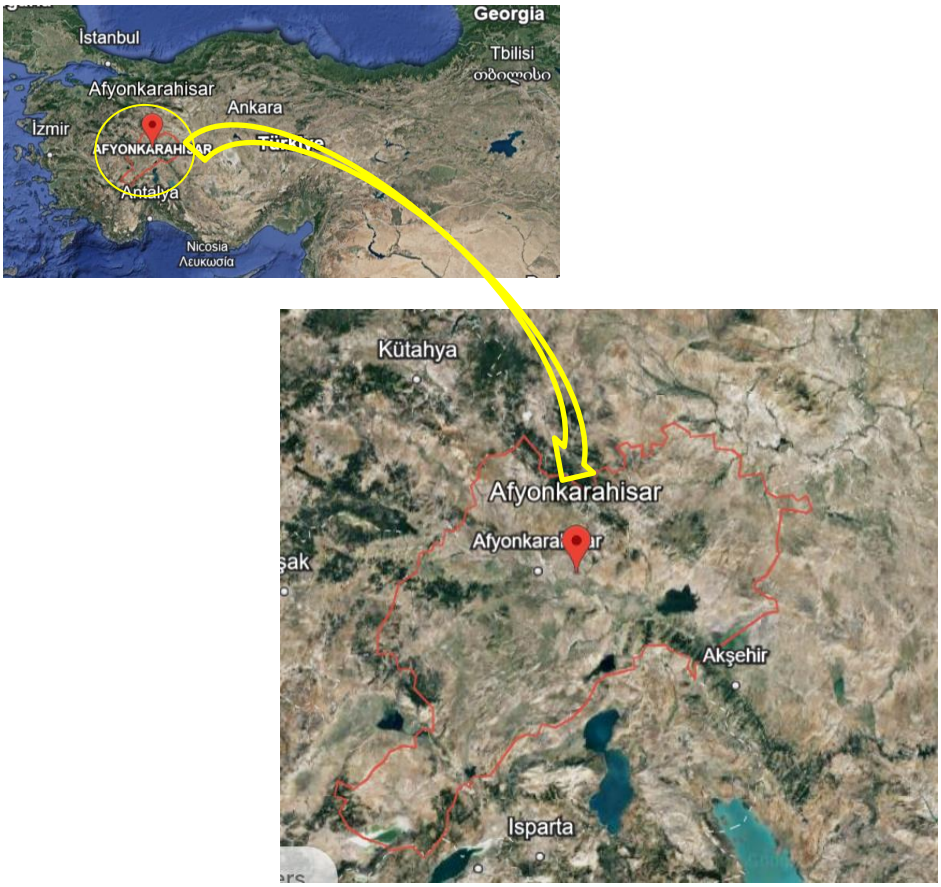


***Figure 2**. Map of Afyonkarahisar province.*

1.4. Proof of origin

Afyonkarahisar Chamber of Commerce and Industry keeps records on the producers, production areas, industrial facilities, processing, packaging and storage. The Chamber also performs the duties of secretariat and coordinating the supervisory authority. The basic principle here is to establish a product tracking and traceability system and to carry out periodic inspections and surveillance. Afyonkarahisar Chamber of Commerce and Industry will work together with Afyonkarahisar Provincial Directorates of Agriculture and Forestry, which is an organization affiliated to the ministry and inspects the compliance of the use of geographical indications related to agriculture and food with the characteristics specified in the registration.

The basic traceability system works as follows:

- The first crucial step in the traceability system is the ear tagging of all animals. Tagging is followed by the mandatory registration of each newly born animal with the Afyonkarahisar Provincial Directorate of Agriculture and Forestry within 21 days of birth. The authorities are responsible for the tagging, and all the pertinent information about the animal is meticulously recorded on the national database. This data is kept until the animal dies or is slaughtered.

- After milk collection, the bulk milk is transferred to the dairy plant. During milk reception, the dairy plant should fill in a" producer slip" indicating the producer and quantity of milk.
- Each day, production is labelled and recorded as a separate batch.
- After processing, the producers are obliged to write an invoice when the product is transferred to the customer, in which the product quantity and consumer information are included. To ensure traceability, the producers should also record the invoice with the batch number. These documents should be kept as long as the dairy plant runs.

As for the audit, Afyonkarahisar Provincial Directorate of Agriculture and Forestry, is responsible for ensuring physical and chemical analyses specified in 1.2, fulfilment of labelling criteria specified in 1.8. Audit criteria are as follows:

a. The geographical area from which milk is supplied.
b. Production Method
    i. Breed of animals from which milk is provided.
    ii. Production stages.
c. Physical properties of the product
d. Chemical properties of the product.
e. Flavour of the product.
f. Packaging.
g. Use of PDO logo and ''Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' name

1.5. Description of the method of obtaining the agricultural product or foodstuff

In the production of 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu', milk from the Anatolian buffaloes fed in open and closed farms within the borders of Afyonkarahisar province is used. The local breed raised in Turkey and known as the Anatolian buffalo is a farm animal originating from the Mediterranean buffalo, a subgroup of river buffalo, and adapted to the conditions of our country (Figure 3).



Figure 3*. Anatolian water buffalo.*

Although the composition of Anatolian buffalo milk grown in the Afyonkarahisar region varies according to lactation and seasonal periods, on average, its dry matter is 16.4%, its fat-free dry matter is 8.6%, its fat content is 7.0%, its protein content is 4.4%, its lactose content is 4.2%, and its ash content is 0.72%. and pH value was 6.55 (Table 5) (Gürler et al., 2013).

Tablo 5*. Gross composition of Anatolian water buffalo fed in Afyonkarahisar province.*

Composition	Minimum	Maksimum
Total solids (%)	15.1	15,8
Non fat dry matter (%)	8.4	8.9
Protein (%)	4.0	4.9
Fat (%)	6.4	7.7
Lactose	3.9	4.5
Ash (%)	0.66	0.78
pH	6.45	6.68

One factor contributing to the characteristic features of 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' is the feeding regime of Anatolian buffaloes. Anatolian buffaloes are fed fodder according to the season, dry clover, and fresh reeds called "frig" grown in wetlands and fed in pastures with their unique flora. Due to its harsh climate and geographical features, Afyonkarahisar has unique flora in its pastures. There are 1800 species and subspecies taxa belonging to 110 families identified in the Afyonkarahisar flora. In addition, there are 234 endemic species in Afyonkarahisar. More importantly, poppy seed cake (locally known as *haşkeş*) included in the ration of Anatolian buffalos contributes to the unique flavor of 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' .

'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' is commercially produced in small-scale dairies as follows. The remaining milk from the production of clotted cream is subjected to homogenization (optional), heat treatment (90-95°C/5-10 min), cooling (44-45°C), inoculation with starter culture (1-2%), filling, incubation (42-43 °C/3 -3.5 hours), precooling and cold storage (+4°C), as shown in Figure 4.

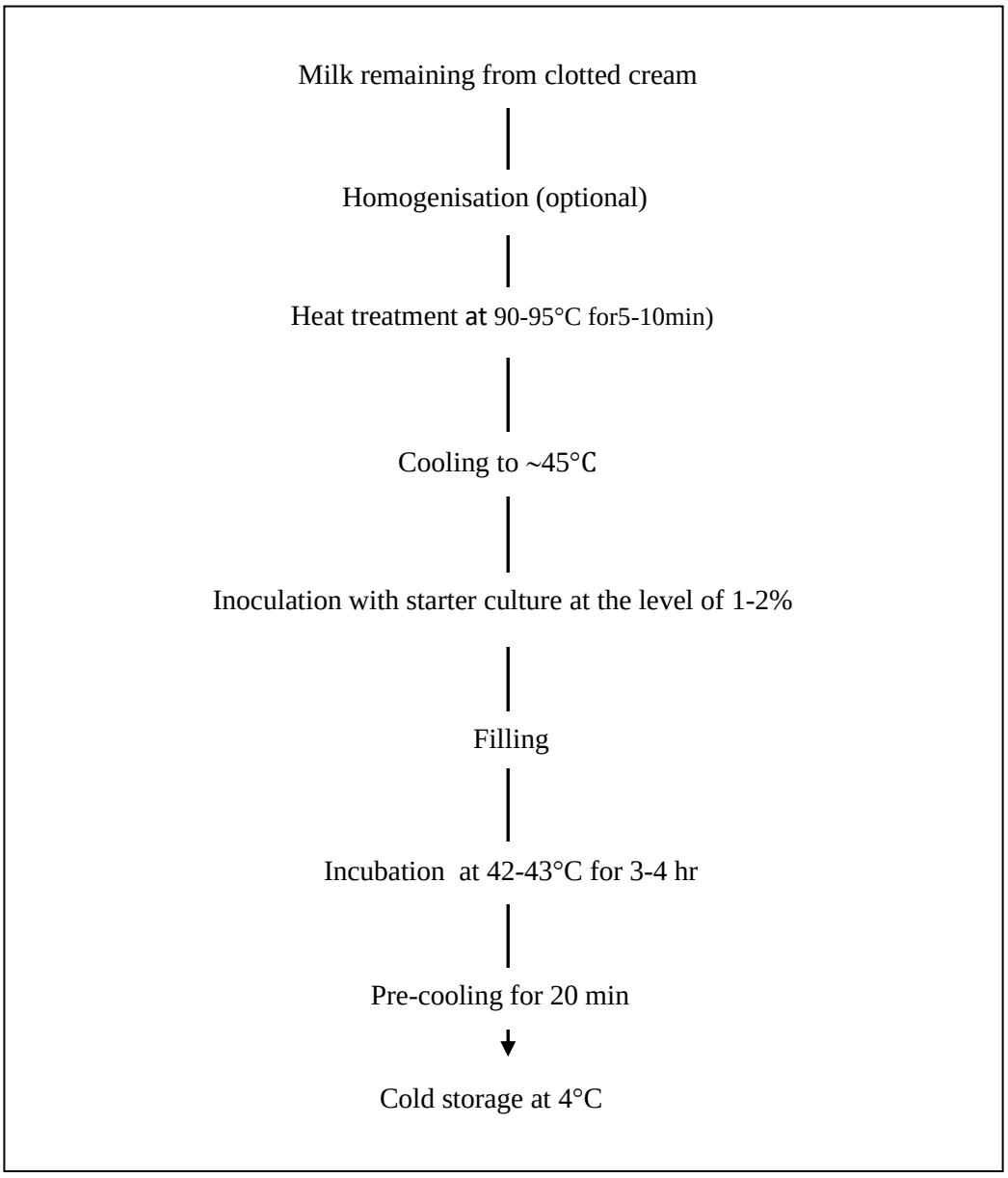


Figure 4*. Production steps of 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu'.*

1.6. Link

Anatolian buffalo is a sub-group of river buffalos that have adapted to Anatolia and Thrace's conditions for about 1500 years and developed their unique characteristic features (Şahin, 2015).

Afyonkarahisar province is one of the most important buffalo breeding regions in Turkey. Due to this importance, the first scientific activities on buffalo husbandry were started at the Afyon Agricultural Research Station, established in 1963. The institution was renamed the Buffalo

Research Institute in 1987 (Kök, 1996; Şahin, 2015). It was named Kocatepe Agricultural Research Institute in 1996 and was closed in 2004 (Şahin, 2015). Today, there is a small dairy unit and buffalo husbandry unit in The Faculty of Veterinary of Afyon Kocatepe University for scientific studies.

The name of Afyonkarahisar province has changed throughout history. Its name in the Ottoman period was Karahisâr-ı Sâhib. The name Karahisar comes from the colour of the dark volcanic rocks rising in the middle of the city and the fortress located on top. The name Sâhib comes from the title of Sâhib Ata Fahreddin Ali, who lived in the last periods of the Anatolian Seljuks and came here during the Mongol invasion. The name Afyonkarahisar was first encountered in Ottoman documents in 1684. However, it was used as "Afyon" (Turkish word for opium) during the Republican period due to the poppy cultivation that has been done in large areas in the region for a long time. With the law no. 5285 dated 09.01.2005, the name "Afyon" was changed to "Afyonkarahisar".

Afyonkarahisar was founded in the Afyonkarahisar plain, surrounded by high mountains with an altitude ranging between 1021 and 1040 m. In the north of the plain are the Turkmen Mountains (Ifli Hill, 1852 m) and their extensions towards the south, the ridges and hills. Kumalar Mountain (Tınaztepe, 1758 m), an utterly volcanic mass, borders the south of the plain, whereas İlkbulak Mountain (1565 m) is located in the west. The waters of the plain and its surroundings are drained into Eber and Akşehir lakes by Akarçay and its tributaries. In the inner parts of the mountainous areas, there are Afyon, Şuhut, Gülova, Sandıklı, and Sincanlı plains, which were formed as a result of tectonic and karstic events and are considered productive agricultural areas. In particular, the Afyon Plain is an alluvial depression plain formed due to tectonic collapse and subsequent filling with alluviums. The presence of lakes (Akşehir Lake, Eber Lake, Karamık Lake and Acı Lake) and rivers/creeks (Akarçay, Kufi, Kali, Menderes, Sakarya, Seyitler, and Hamam) in Afyonkarahisar province makes the area suitable for buffalo breeding as buffalo are heat-sensitive animals and seek water to cool down during summer.

Afyonkarahisar has a continental climate. Summers are hot and dry, and winters are cold and snowy. In Afyonkarahisar, the average temperature values are below 1°C in October-April when the sunshine hours decrease below 6,5 hours according to long-year averages. The average annual rainfall in Afyonkarahisar is 443 mm. The most precipitation falls in May, with 54.2 mm, and the least precipitation falls in August, at 13.3 mm (Table 5).

Table 2 *. The long-term meteorological data of Afyonkarahisar province (1929-2022)*

AFYONKARAHISAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEARLY
AVERAGE TEMPEARTURE °C	0.3	1.8	5.2	10.4	15.1	18.9	22.2	22.1	17.9	12.4	7.0	2.4	11.3
HIGHEST AVERAGE TEMP. °C	4.5	6.5	10.9	16.5	21.4	25.6	29.5	29.6	25.3	19.3	12.8	6.6	17.4
LOWEST AVERAGE TEMP. °C	-3.5	-2.4	0.1	4.2	8.2	11.3	13.8	13.7	9.9	5.8	1.7	-1.3	5.1
AVERAGE SUNNY HOURS	2.9	4.0	5.0	6.4	8.1	9.7	11.1	10.5	8.8	6.3	4.7	2.8	6.7
AVERAGE RAINY DAYS	12.72	11.97	12.02	11.44	12.10	8.14	3.70	3.24	4.43	7.39	8.36	12.40	107.9
MONTHLY AVR. PRECIPIT. (MM)	44.9	39.7	45.0	45.1	54.5	42.0	21.9	13.3	21.4	35.3	33.2	46.7	443.0

The rainfall regime is not regular. When we look at the distribution of precipitation according to seasons, the most precipitation falls in spring, and the least precipitation falls in summer

(Figure 5a). Snowfalls are also observed during the winter months in the province, where continentality is effective. The annual average number of days with snowfall is 19.53, and the days covered with snow are 38.59 days. During the winter months, both snowfall and the number of days covered with snow increase. Again, due to these topographic features, the days when the temperature drops below zero degrees in Afyonkarahisar in winter approaches 90 days.

The average annual relative humidity of the province is 64%. It is below average for most of the year (between April and October). It rises above average during the winter, and the first months of seasons close to this season (March and November).

In addition, the fact that the Akarçay closed basin, which includes the Afyon plain, is generally in the form of a trough extending in the NW-SE direction affects the wind directions and speeds. According to Afyonkarahisar Meteorology station data, this basin constitutes one of the regions with the lowest wind speeds and frequencies in Turkey (Figure 5c). As a result, it consists of pits or plains surrounded by mountains, with no natural channels to create air currents.

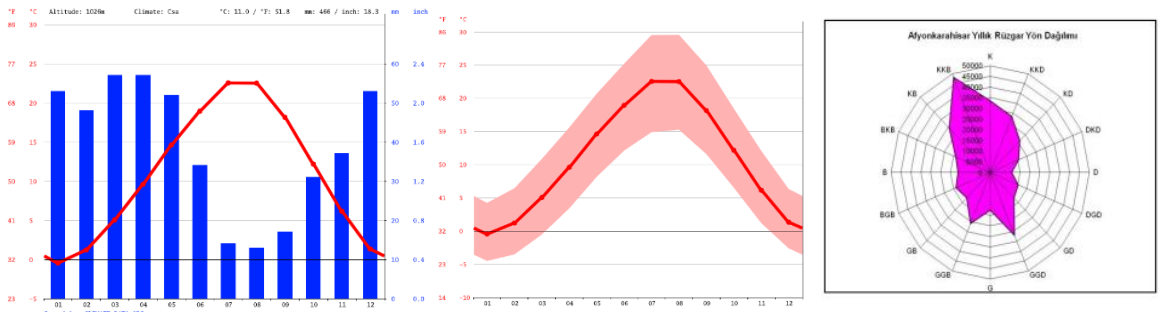


Figure 5*. Afyonkarahisar rainfall vs. temperature (a), average temperature (b) and prevailing wind direction (c) graphs by month.*

To sum up, Afyonkarahisar is one of Turkey's provinces with the lowest relative humidity and wind speed.
Afyonkarahisar ranks first in the Aegean region in terms of meadow (16.407 da) and pasture areas 315.359 da).

The province is a prosperous province in terms of plant diversity. It is known that around 2000 taxa are distributed within the provincial borders. Three hundred thirty of these plants are endemic to Turkey. In Afyonkarahisar, the plant families Asteraceae, Fabaceae, Lamiaceae, Caryophyllaceae Verbascum, and Astragalus species grow most (Kargıoğlu et al., 2007). In addition, due to the climate and soil structure, a significant amount of forage crops (vetch, clover, silage corn, and sainfoin) are grown in the region.

Poppy grows at an altitude of 700-1200 m. The poppy plant likes sunny and warm climates. It grows especially in places where the light period is extended. The total temperature requirement of the poppy during its growth period is 2300-2700°C. The annual rainfall requirement of the poppy plant is 600-700 mm. It is desired that 300-499 mm of this rainfall falls during the vegetative development. Rainfall after flowering harms fertilization. The poppy plant is not selective about soil. However, sandy and loamy soils are ideal due to its roots.

Given the above conditions, Afyonkarahisar's altitude, climate, and soil properties are suitable for poppy production. Afyonkarahisar with its average altitude of 1034 m., and its soil lacking clay but mostly sandy promote its root development and low wind speed which does not harm the poppies whose root lightly held soil. In addition, the total temperature being above 3000°C and average annual precipitation (443 mm) supports poppy farming.

Additionally, Turkey ranks second in the world in poppy seed production, with a production of 12240 tons and a production area of 26501 ha (FAOSTAT, 2023). According to Turkish Institute of Statistics (TUIK) 2022 data, Afyonkarahisar is the province where poppy seeds are produced the most in Turkey, as 31.3% of the area is allocated for production and 34.9% of the production is realized. The pulp remaining after the processing of poppy seeds is used to feed dairy animals in the region, especially Anatolian buffalos.

'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' is used in many local food dishes. It has been the subject of many scientific studies due to its economic and nutritious feature. Due to its rich cuisine, Afyonkarahisar was declared by UNESCO in 2019 as one of the three gastronomy cities in Turkey.

1.7. CONTROLS

AFYONKARAHİSAR TİCARET VE SANAYİ ODASI
AFYONKARAHİSAR CHAMBER OF COMMERCE AND INDUSTRY
Address : Dörtyol Mahallesi 2078. Sokak No:11 03040
Merkez/Afyonkarahisar/TÜRKİYE
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Faks : +90 (272) 213 56 60
E-mail : info@afyonkarahisartso.org.tr
Websites : www.afyonkarahisartso.org.tr
Tax Office and Tax No: Tınaztepe /8440013729

REPUBLIC OF TURKEY MINISTRY OF AGRICULTURE AND FORESTRY, AFYONKARAHİSAR PROVINCIAL AGRICULTURE AND FORESTRY DIRECTORATE
(Audit Body)
Contact information
Address : Ali Çetinkaya Mahallesi Ali Çetinkaya Bulvarı No:2 Merkez-Afyonkarahisar/TÜRKİYE
Telephone : +90 (272) 213 71 00
Faks : +90 (272) 212 04 49
E-mail : afyonkarahisar@tarimorman.gov.tr

Republic of Turkey Ministry of Agriculture and Forestry, Afyonkarahisar Provincial Directorate of Agriculture and Forestry checks whether the 'Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu' has the characteristics specified in Article 1.2 and

whether it comes from the geographical area specified in Article 1.3 and whether it is produced according to the production method specified in Article 1.5. and finally checks whether it complies with the labeling requirements specified in Article 1.8.

1.8. Labelling

In addition to the compulsory information provided for by legislation on the labelling and presentation of foodstuffs, labels must include the following:

— The name of the designation ‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’,

— Trade name and address or short name and address or registered mark of the producer,

— European Union PDO logo

— The following logos





2. APPLICANT GROUP

AFYONKARAHİSAR TİCARET VE SANAYİ ODASI
AFYONKARAHİSAR CHAMBER OF COMMERCE AND INDUSTRY

Address : Dörtyol Mahallesi 2078. Sokak No:11 03040 Merkez/Afyonkarahisar/TÜRKİYE
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Websites : www.afyonkarahisartso.org.tr

Afyonkarahisar Chamber of Commerce and Industry was established mainly to Article 4 of the Law of 5174 in 1891 as a semi-public organization of the Union of Chambers and Commodity Exchanges of Turkey and Chambers and Exchange. As an occupational organization, to meet the common needs of its members in Afyonkarahisar Province, to facilitate professional activities, to ensure the development of the profession in accordance with the general interests, to protect professional discipline, morality, and solidarity in order to dominate the honesty and trust in the relations of members and people with each other and with the people. It is a vocational institution established to fulfill the duties assigned to the chambers with the services and legislation. Among their members are those who undertake yoghurt production using the name of 'Afyon Manda Yoğurdu /Afyonkarahisar Manda Yoğurdu'.

Afyonkarahisar Chamber of Commerce and Industry can offer, submit a petition, and apply to the relevant public institutions regarding issues within its field of activity. It has the right to file a lawsuit on behalf of these members or behalf of these members in case of some or all members. There are also services such as monitoring practices that may disrupt competition through agreements, decisions, or consistent activities and reporting to the relevant authorities.

Afyonkarahisar Chamber of Commerce and Industry has 8,429 members consisting of real and legal entities. It is a professional organization established to facilitate its members' professional activities and assist them in business development and target market. Its members deal with the processing and marketing of agricultural and livestock products.

Afyonkarahisar Chamber of Commerce and Industry has applied for PDO registration of ‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’ and observes the producers.

3. TURKISH REGISTRATION OF 'AFYON MANDA YOĞURDU/AFYONKARAHİSAR MANDA YOĞURDU'

In the Official Geographical Indication and Traditional Product Name Bulletin No. 106 dated 02.08.2021 of the Turkish Patent and Trademark Office of the Republic of Turkey, it was announced that ‘Afyon Manda Yoğurdu / Afyonkarahisar Manda Yoğurdu’ was registered as PDO.

https://online.turkpatent.gov.tr/trademark-search/pub/#trademark_result_detail

https://ci.turkpatent.gov.tr/cografi-isaretler/detay/643