



Formation Of Çotanak Groups According To Direction Of Branches In The Ocaks Tombul And Palaz In Hazelnut Varieties

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Abstract

This study was conducted with Tombul and Palaz hazelnut varieties as three recurrences in 2010. Çotanak groups and çotanak lengths was determined according to direction of branches which in the Ocaks (a Turkish name of the training or growing system used for hazelnuts). In this study, while there was maximum 7 çotanak on the branches of palaz hazelnut variety, on the tombul hazelnut it was determined as 11. At the Palaz variety, it was determined that there was 54.66, 54.99, 68.33, 81.33 çotanak groups respectively in the east, west, north, south directions, likewise at the Tombul variety there was 106.33, 83.33, 96.34, 115.00 çotanak groups. It was determined that for Palaz variety, the highest çotanak length was 49.96 mm in the east, the lowest çotanak length was 47.48 mm in the south and as for Tombul variety the highest çotanak length was 49.63 mm in the north, the lowest çotanak length was 46.60 mm in the west. Both in the two hazelnut varieties it was determined that south facing branches had the most fruits and according to average of four directions; at the palaz hazelnut variety double and triple çotanak occurred, at the tombul hazelnut variety triple and quartet çotanak occurred.

Key Words: hazelnut, Tombul, Palaz, direction, çotanak group

Introduction

Generally, hazelnut is the primary income source of Middle and Eastern Black Sea Region where the land is roughness and the hazelnut is grown intensively (Okay et al., 1986).

Hazelnut can be grown in each direction in our country. Hazelnut fields in the Black Sea have been established in great extent in the northern direction and at sea side (Özbek, 1978).

It is explained that direction have effects on the fruit growing, fruit matured earlier in the south direction, fruit was richer with respect to carbohydrate and aroma (Ülkümen 1973; Ağaoğlu, 1986 and Ağaoğlu et al., 1995).

In a study conducted in order to determine the effect of the direction of the branches on the quality of hazelnut, it was found that eastern direction provided the best impact on the quality of fruit. It was emphasized that while forming a hazelnut garden, eastern direction should be preferred compared to other directions (Karadeniz ve Küp, 1997).

One of the factors affecting the yield of hazelnut is the number of fruit in the Çotanak. It is stated that this is considered as a feature of the type and its level of heredity is high. If the number of fruit in the Çotanak is too much, the average size will decrease and the shape of fruit will be less uniform due to the pressure a fruit puts on the development of another fruit (Thompson et al., 1996).

One of the most distinct differences that distinguish Turkish hazelnut varieties from the varieties in other countries is that the fruit leaves are too long and they enclose the fruit tightly. Therefore, ripe fruit do not fall to the ground by themselves. This situation prevents ripe fruit from drifting to the bottom of the valley in inclined gardens after a heavy rain (Ayfer and et al., 1986). Tombul hazelnut type is generally comprised of 3 or 4 Çotanak and also its leaves are 2.5 times bigger than its size. However, Palaz hazelnut type is comprised of

In this study, it was aimed to determine whether the group of Çotanak and size of fruit

leaves change in Tombul and Palaz hazelnut types or not.

Table 1. The average Çotanak groups according to the direction of the branches in the hazelnut brushes of Palaz hazelnut type.

Çotanak Groups	East	West	North	South
1	6.67	10.33	13.33	9.67
2	15.33	16.33	22	24.33
3	16	11.67	14.67	24.33
4	11	10.33	11.33	13.67
5	5.33	3	6	6.33
6	0.33	1.33	1	2
7	0	2	0	1
Total	54.66	54.99	68.33	81.33

Table 2. The average Çotanak groups according to the direction of the branches in the hazelnut brushes of Tombul hazelnut type

Çotanak Groups	East	West	North	South
1	5.33	7	6	5
2	14	15.67	14	22.67
3	23.67	19.67	22.33	23
4	26	21.33	20	30.33
5	19	12.33	17.67	19.67
6	12	6	9.67	6.33
7	3	1	4.67	4.67
8	2	0.33	2	2.67
9	1	0	0	0.33
10	0	0	0	0.33
11	0.33	0	0	0
Total	106.33	83.33	96.34	115

Material and Method

The study was conducted in Orhaniye village of Altınordu district in Ordu Province. The hazelnut cultivars namely Tombul and Palaz that are grown on a large scale in the region were used. In the study conducted in 2010, three hazelnut brushes similar to each other were selected. In these brushes, branches that look at 4 different directions were determined. The limbs on the branches in each direction were picked up separately and counted according to limbs groups. The length of the limbs picked up from every direction was measured with digital calliper.

Result and Discussion

In this study, while there was maximum 7 çotanak on the branches of palaz hazelnut variety, on the tombul hazelnut it was determined as 11. At the Palaz variety, it was determined that there was 54.66, 54.99, 68.33, 81.33 çotanak groups respectively in the east, west, north, south

directions, likewise at the Tombul variety there was 106.33, 83.33, 96.34, 115.00 çotanak groups (Table 1-2).

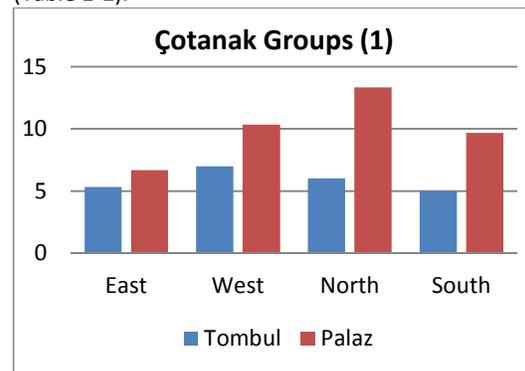


Figure 1. According to direction of branches ace Çotanak groups in Palaz and Tombul hazelnut variety

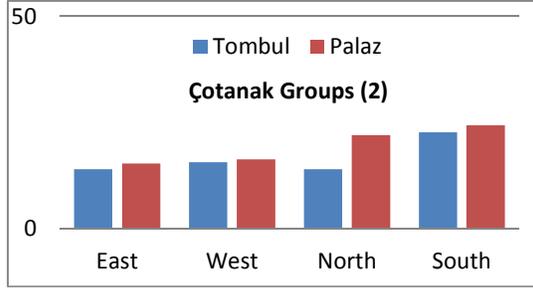


Figure 2. According to direction of branches double Çotanak groups in Palaz and Tombul hazelnut variety.

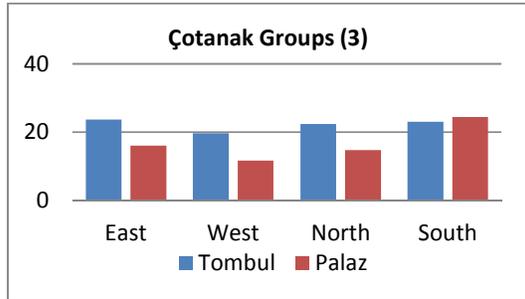


Figure 3. According to direction of branches triple Çotanak groups in Palaz and Tombul hazelnut variety.

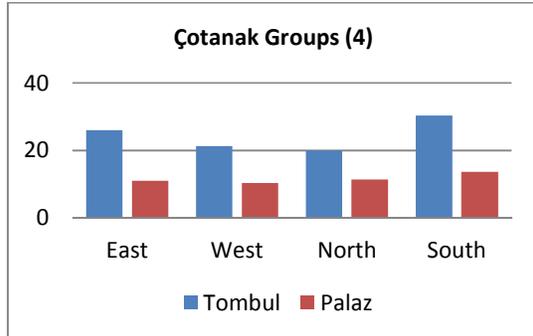


Figure 4. According to direction of branches quartet Çotanak groups in Palaz and Tombul hazelnut variety.

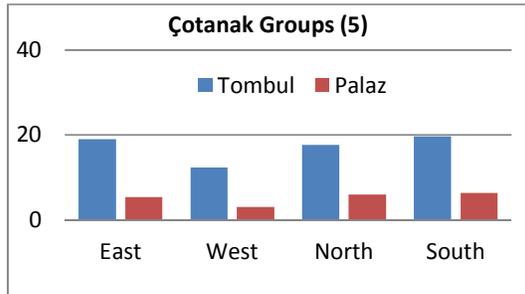


Figure 5. According to direction of branches quintet Çotanak groups in Palaz and Tombul hazelnut variety.

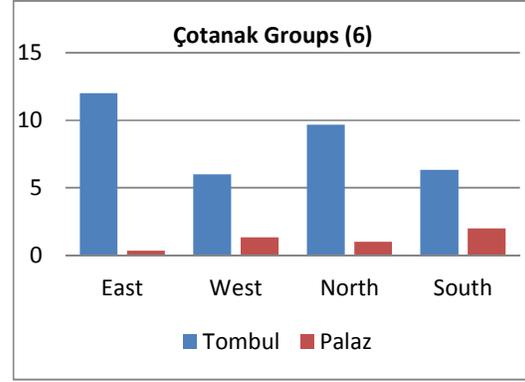


Figure 6. According to direction of branches sestet Çotanak groups in Palaz and Tombul hazelnut variety.

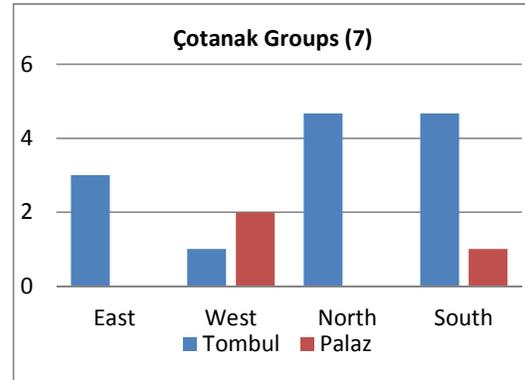


Figure 7. According to direction of branches septet Çotanak groups in Palaz and Tombul hazelnut variety.

It was determined that Palaz hazelnut variety occurs more single-double çotanak groups than Tombul hazelnut variety in South, North, east and West directions (Figure 1-2). It was seen Tombul hazelnut variety occurs more 4-5-6-7 çotanak groups than palaz hazelnut variety in each directions (Figure 4,5,6,7). It was determined Palaz hazelnut variety has more triple çotanak group than Tombul hazelnut variety in South direction. But in the North, east and West direction.

Table 3. Average çotanak lengths depending on the direction of the branches in the ocaks belonging to Tombul and Palaz cultivars

Çotanak Lengths (mm)	East	West	North	South
Palaz	9,96	48,71	48,75	47,48
Tombul	8,41	46,60	49,63	48,27

It was determined Tombul hazelnut variety occurs more triple çotanak groups than Palaz hazelnut variety. It was determined while Tombul

hazelnut variety was occurred 8-9-10 and 11 çotanaks, there was no çotanak has more than seven fruits.

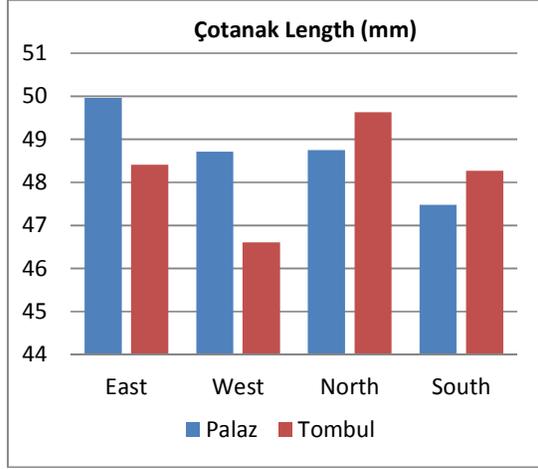


Figure 8. Tombul ve Palaz fındık çeşidine ait ocaklardaki dalın bulunduğu yöneye göre ortalama çotanak uzunlukları (mm)

It was determined that for Palaz variety, the highest çotanak length was 49.96 mm in the east, the lowest çotanak length was 47.48 mm in the south and as for Tombul variety the highest çotanak length was 49.63 mm in the north, the lowest çotanak length was 46.60 mm in the West (Table 3- Figure 8). This study aims to find out whether Çotanak groups and lengths change in the cultivars depending on the directions. In the study, it is seen that more Çotanaks have been grown in the south directions where sun exposure is the best. While in Palaz cultivar, Çotanaks of 2 and 3 grow more in the south, in Tombul cultivar Çotanaks of 3 and 4 grow more in the south and east directions. In order to obtain big fruit, the number of the fruit in Çotanaks is desired to be between 1-3, and to get small fruit between 4 or 5 (Thomson et al., 1996).

That's why, while the number of fruit in Çotanaks is required to be much, the fruit must be bigger at the same time. It is more beneficial to

consider that the harvesters who desire to have more and bigger fruit in the fields where hazelnuts are grown should prefer the south and east; and should prefer east in Palaz variety in sloping lands in which they do not want the fruit to fall from çotanaks, and on the other hand, in Tombul variety, it is better to choose the north direction.

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