MARKETING PRICES OF BARLEY IN SOUTHEASTERN ANATOLIA: BLACK VS. WHITE HULLED BARLEY

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Abstract: This study aimed to assess the presence of various ratios of black and white hulled grains in barley grain lots and mixture impacts on marketing prices. The study was carried out in the Sanliurfa commodity market in the autumn of 2005 in Sanliurfa and Diyarbakir in 2015 and Sanliurfa, Adiyaman and Gaziantep local commodity markets in 2017. The seven barley grain samples were prepared (100% White [W], 10% Black [B]+90% White [W], 20%B+80%W, 30%B+70%W, 40%B+60%W, 50%B+50%W and 100% Black) and presented to four randomly selected grain purchasers in all commodity markets and marketing price offers were scored. Increasing ratios of black-hulled barley (BHB) reduced marketing price gradually in 2005. In 2015, marketing prices were 0.337 US$ kg⁻¹ for white and 0.365 US$ kg⁻¹ for black in Sanliurfa and 0.334 US$ kg⁻¹ for white and 0.352 US$ kg⁻¹ for black barley in Diyarbakir. In 2017, except for Adiyaman, marketing price offers were in favour of BHB and it received 0.37 US$ kg⁻¹ and 0.321 US$ kg⁻¹ marketing price offers in Gaziantep and Diyarbakir, respectively. In 2017, WHB marketing prices were 0.325 US$ kg⁻¹ and 0.315 US$ kg⁻¹ in Gaziantep and Diyarbakir locations, respectively.

It was concluded that, except for Adiyaman, barley marketing prices traditionally in favour of white hulled barley turned out to be in favour of black type in a decade in south eastern Anatolia.

Key words: SE Anatolia, black-hulled barley, landraces, marketing price, white-hulled barley.

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Introduction

The modern territories of South eastern Turkey, Syria, Iraq, Jordan, Lebanon, Palestinian and Western Iran encompass the region often referred to as the Fertile Crescent. Here, many of the species of temperate-zone agriculture originated and were first domesticated. Their wild relatives and landraces are still found in the region (Harlan, 1992; Zohary and Hopf, 1993). The Fertile Crescent is at the core of the West Asia and North Africa (WANA) region. Many major crops, including cereals, pulses, spices, oil crops, fibre plants, pasture, forage species, fruits and nut trees trace their origins to different parts of WANA (Harlan, 1975, 1992). The highest plant diversity occurs in Turkey (with 163 plant families, 1225 genera, 9000 species and 3000 taxa as endemic) and Morocco (Jaradat, 1997). The WANA region is the centre of origin and diversity of *Hordeum* spp. (wild and cultivated barley). Landraces of barley (*Hordeum vulgare* L.) with purple or black grain are grown in south eastern Turkey, Iraq and Northern Syria extensively (Ozberk and Ozberk, 1993; Tolbert et al., 1979; Ceccarelli and Grando, 1999). Lemmas and paleas of these types of barley landraces turn purple and black due to the presence of anthocyanins or melanin-like pigments respectively. Yerli Siyah, Arabi Aswad, local black and Arivad are major black-hulled barley landraces grown in south eastern Turkey, Northern Syria and Iraq, respectively (Ozberk and Ozberk, 1993; Bassam and Al-Omary, 1994; Bishaw, 2004). Barley based farming systems exist in wide areas along the dry margins (200–300mm of annual rainfall) of cultivation in most countries of the Fertile Crescent (Jaradat, 1997).

Multiple farmer concerns (e.g., yield, risk, and quality), environmental heterogeneity and missing markets contribute to the persistence of landraces (Brush and Meng, 1998). Most farmers in Syria had positive perceptions of the barley local landraces where one third reported no disadvantage in growing local Black-Hulled Barley (BHB). The entire barley area (99%) was planted with the black landrace Arabi Aswad in Northern Syria. The same phenomenon is valid for Iraq. In the Turkish site, all barley growing regions close to the Syrian border are devoted to the black-hulled landrace ‘Yerli Siyah’ or ‘Yerli Çakır’. Towards the inland areas, the WHB acreage dominates over BHB in Turkey. Namely, 15% of total barley acreage of Turkey builds up from SE Anatolia. Nearly 283 000 ha of the area is devoted to barley production with a yield of 261 0 kg ha\(^{-1}\). Total production is about 738.000 tons (TUİK, 2017). Syrian farmers believe that the grain and straw quality of BHB provides more palatable feed for sheep than yellow barley (Ceccarelli and Grando, 1999; Nygaard, 1983). The decision to cultivate a traditional variety is determined by the household perceptions of its ability to fulfil the household requirements relative to alternative options (Brush and Meng, 1998). Turkish farmers and cattle owners prefer to grow black-hulled barley for good feeding characteristics. They claim that black-hulled barley is relatively soft and
can be given to sheep and dairy cattle without grinding. This type of feeding is cost saving. Furthermore, if it is ground, it becomes a flour-like product. When it is given to sheep and cows, tiny flour dust makes the animals sneeze while breathing during feeding. The nutritional value of BHB is quite satisfactory compared to that of yellow kernels. BHB contains more protein and more lignin than yellow barley (Choo et al., 2005). More protein content is a desirable characteristic of the feeding value. Grain weights of BHB were 19% lower than those of yellow grain landraces (Choo et al., 2005; Ceccarelli and Grando, 1999). The BHB has yield stability against all kinds of biotic and abiotic stress factors and has survived under the natural selection pressure over the years. It is a very early maturing type and escapes from severe drought and sunn pest damage under dryland conditions in the region (Ozberk and Ozberk, 1993). BHB landraces are also more tolerant to salinity (Hazem et al., 2011). White-hulled landrace barley is higher yielding than BHB under supplementary irrigated conditions. However, BHB was better performing under dryland conditions (Yassen and Al-Omary, 1993; Ozberk and Ozberk, 1993). BHB, although having short height, lodges completely under rainfed and supplementary irrigated conditions. Protein content (%) of BHB was lower than that of white landrace barley giving 12.5% and 13.1%, respectively (Ozberk and Ozberk, 1993). On the other hand, reverse situations are also reported (Choo et al., 2005).

BHB was discarded from 6-row malting barley standards in the USA in 1956 (http://www.gipsa.usda.gov/reference-library/standards/history/barley, Pdf). It was put into the class of ‘other grains’ (Anonymous, 1999) and allowed the 2% presence in 6-row malting barley in No.1 (best grading) class. Turkish Grain Board purchases the BHB in the same class with purple aleuronic barley and offers lower prices than for WHB (Anonymous, 2005). S.Urfa commodity market is in the third range after Polatlı and Konya for annual marketing capacity and the most important BHB marketing arena in the region (Ozberk et al., 2005). The Diyarbakir commodity market is also emerging. In these commodity markets, pure white and BHB are rarely found separately. They are usually found as a mixture.

This study aimed to assess ‘if the current trend of barley marketing prices traditionally in favour of white grains turns out in favour of black-hulled barley in recent years and its impacts on net returns’ in south eastern Anatolia.

**Materials and Methods**

2005: Tokak 157/37 was widely grown (Akıncı et al., 1999) white-hulled feeding barley variety in 2005 and subjected to the study. A dockage cleaned grain sample was utilised in the study. 1000-kernel weight and hectolitre weight of Tokak 157/37 were 48.223 g and 72.10 kg, respectively. BHB landrace (Yerli Siyah) with 47.264 g of 1000-kernel weight and 71.46 kg of hectolitre weight was
another variety used in the study. The study was carried out in the Sanliurfa local commodity market in September 2005.

2015: The dockage cleaned WHB landrace of Yerli Beyaz and the BHB landrace of ‘Yerli Siyah’ were used as plant material. The dockage cleaned material was subjected to quality analysis before the study (Table 1). Marketing price studies were carried out in September of 2015 in Sanliurfa and Diyarbakir local commodity markets, respectively.

2017: Akhisar-98 and Yerli Siyah were employed for white and black hulled feeding barley cultivars, respectively. Dockage cleaned seed samples of both cultivars were employed for the study. Protein (%), hectolitre (kg) and 1000-kernel weights (g) and sieving characteristics were scored initially (Table 1). The study was carried out in Adıyaman, Şanlıurfa and Gaziantep local commodity markets in May 2017.

Table 1. Some quality characteristics of white (Akhisar-98) and BHB (landrace) and mixtures in 2015 and 2017.

| Entries 2015 | Protein (%) | Hectolitre weights (kg) | 1000 Kernel weights (g) | Starch (%) | Above % sieve>2.5 mm | Above % sieve>2.8 mm |
|--------------|-------------|-------------------------|-------------------------|------------|----------------------|----------------------|
| 100% White   | 11.8        | 59.3                    | 40.0                    | 70.6       | 68.7                 | 47.1                 |
| 90% WHB + 10% BHB | 11.9        | 60.8                    | 40.5                    | 70.7       | 64.0                 | 37.4                 |
| 80% WHB + 20% BHB | 12.2        | 59.8                    | 38.25                   | 69.7       | 62.9                 | 36.5                 |
| 70% WHB + 30% BHB | 12.2        | 59.8                    | 38.75                   | 70.4       | 57.3                 | 29.1                 |
| 60% WHB + 40% BHB | 12.8        | 62.4                    | 40.5                    | 68.9       | 49.9                 | 28.5                 |
| 59% WHB + 50% BHB | 12.8        | 60.6                    | 37.5                    | 68.7       | 49.9                 | 22.4                 |
| 100% BHB     | 14.3        | 67.0                    | 32.0                    | 65.9       | 26.8                 | 2.5                  |

| Entries 2017 | Protein (%) | Hectolitre weights (kg) | 1000 Kernel weights (g) | Starch (%) | Above % sieve>2.5 mm | Above % sieve>2.8 mm |
|--------------|-------------|-------------------------|-------------------------|------------|----------------------|----------------------|
| 100% White   | 12.4        | 66.8                    | 42.5                    | na         | 41.8                 | 36.7                 |
| 90% WHB + 10% BHB | 12.5        | 68.4                    | 40.0                    | na         | 41.9                 | 32.7                 |
| 80% WHB + 20% BHB | 12.6        | 68.4                    | 40.0                    | na         | 39.2                 | 30.6                 |
| 70% WHB + 30% BHB | 12.3        | 69.2                    | 40.0                    | na         | 34.8                 | 28.7                 |
| 60% WHB + 40% BHB | 12.2        | 69.6                    | 42.5                    | na         | 33.6                 | 28.0                 |
| 59% WHB + 50% BHB | 13.2        | 71.2                    | 37.5                    | na         | 31.7                 | 25.0                 |
| 100% BHB     | 13.6        | 73.2                    | 37.0                    | na         | 30.5                 | 12.9                 |

Statistical methods

2005: A randomised complete block design with 7 treatments and 5 replications (purchasers) was employed for statistical analysis. Seven different mixture ratios of BHB and WHB (A: 100% White, B: 10% Black (B) + 90% White (W), C: 20% B+80% W, D: 30%B+70%W, E: 40%B+60%W, F: 50% B+50%W
and G: 100% Black) were considered as treatments. Replications were the randomly selected grain buyers in the commodity market. Grain samples were presented to the randomly selected grain purchasers in the commodity market for marketing price estimations. Data obtained from the study were subjected to the analysis of variance using the JMP-5 statistical software (SAS Institute) and Totemstat (Açıkgöz et al., 2004). The relationships between average market prices and all treatments were further investigated through regression analysis (Finlay and Wilkinson, 1963; Eberhard and Russel, 1966) using the same statistical software.

2015: Two grain samples of black and white barley landraces were cleaned by dockage tester, and two sets of 7 treatments (as mixtures with a total weight of 1 kg) like that of 2005 were prepared from those samples. Seven treatments were presented to five randomly selected grain purchasers in both Sanliurfa and Diyarbakir commodity markets employing a randomised complete block design with 5 replications (purchasers).

Individual ANOVAs for Sanliurfa and Diyarbakir were performed and the marketing price offers were grouped by LSD test. The coefficients of correlation between some quality traits versus marketing prices were also performed. The coefficients of correlation between marketing prices versus various quality traits were assessed through correlation analysis. Regression analyses were further performed to assess the relationships between mixture ratios versus marketing prices in both commodity markets. The equations obtained from regression analysis with a high coefficient of determinations are considered reliable for further price estimations for mixed grain lots.

2017: Dockage cleaned grain samples were prepared as in the previous years, with given ratios building up a mixture with a total of 1 kg. Three sets of grain mixtures were presented to randomly selected grain purchasers in local commodity markets in neighbouring Sanliurfa, Adiyaman and Gaziantep provinces in SE Anatolia. Results were subjected to analysis of variance employing a randomised complete block design with 4 (purchasers) replications by the JMP-5 statistical software. Individual ANOVAs for each location were performed and the marketing price offers were grouped by LSD test. The coefficients of correlation between some quality traits versus marketing prices were assessed. Statistically significant correlations were further investigated through regression analysis.

Quality analysis

1000-kernel weights (g) (Ozkaya and Kahveci, 1990), hectolitre weights (kg) and starch (%) (Uluöz, 1965), and sieving characteristics (William et al., 1986) were scored. Protein rate (%) was scored by NIT (Near Infrared Transmitting) employing Anonymous (1990).
Results and Discussion

2005: The results of ANOVA indicated that both treatments and replications (purchasers) were found to be significant, giving $F=17.86^{**}$ and $F=4.78^{**}$ respectively. It was revealed that grain buyers had special preferences. Treatments were compared by LSD test, and the groups are shown in Table 2a. The pure (100%) WHB was offered the highest marketing price (0.180 US$ kg$^{-1}$) and the pure (100%) BHB received the lowest one (0.168 US$ kg$^{-1}$). Other mixtures took place in between ranking showing the less BHB the more marketing price. The effect of mixture ratios on market prices was further investigated through linear regression analysis. Regression was found to be significant, giving $F=74.73^{**}$. The regression equation was calculated as follows:

$$\text{Marketing price}(Y) = 245.286 – 2.764 \times (X=\text{BHB}\% ).$$

Table 2a. LSD groups for marketing prices of treatments in Sanliurfa in 2005.

| Marketing Prices and Groups (TL kg$^{-1}$ and US$ kg^{-1}$) |  |
|----------------------------------------------------------|---|
| 100% White-hulled barley                                  | 0.2440a ($0.180) |
| 90% White-hulled barley + 10% Black-hulled barley        | 0.2384b ($0.177) |
| 80% White-hulled barley + 20% Black-hulled barley        | 0.2362b ($0.175) |
| 70% White-hulled barley + 30% Black-hulled barley        | 0.2350bc ($0.174) |
| 60% White-hulled barley + 40% Black-hulled barley        | 0.2310cd ($0.171) |
| 50% White-hulled barley + 50% Black-hulled barley        | 0.2284de ($0.169) |
| % 100 Black-hulled barley                                 | 0.2266e ($0.168) |

LSD=4.25; 1US$=1.37YTL.

The coefficient of determination ($R^2\%$) was found to be 69.4%. This indicated the reliability of the equation given above. The regression line and the confidence interval are given in Figure 1.

Figure 1. The linear regression line confidence interval of 95% in Sanliurfa in 2005.
2015: Individual ANOVAs for the marketing price were performed for Sanliurfa and Diyarbakir locations and treatments were found significant, giving $F=188.16$ and $F=31.21**$, respectively. Replications (purchasers) were also significant, giving $F=0.009*$ and $F=10.87**$ respectively. Means of treatments were grouped employing the LSD test (Table 2b).

Table 2b. Entries and means of LSD groups for marketing prices of treatments in Şanlıurfa and Diyarbakir in 2015.

|                | Şanlıurfa | Diyarbakir |
|----------------|-----------|------------|
| Pure white     | 0.762d    | 0.752e     |
| 90%W + 10%B    | 0.755e    | 0.754de    |
| 80%W + 20%B    | 0.759de   | 0.756de    |
| 70%W + 30%B    | 0.762d    | 0.759cd    |
| 60%W + 40%B    | 0.768cbe  | 0.763c     |
| 50%W + 50%B    | 0.778b    | 0.770b     |
| Pure Black     | 0.818a    | 0.788a     |

LSD=0.3; LSD=0.049; 1US$=2.24TL.

Pure BHB received the highest marketing price offers with 0.183 US$ kg$^{-1}$ and 0.176 US$ kg$^{-1}$ respectively. Those of pure white had the lowest marketing price offer with 0.170 US$ kg$^{-1}$ and 0.168 US$ kg$^{-1}$ respectively. The lower presence of white barley in the mixtures, the higher marketing prices received. An orthogonal comparison indicated the presence of a linear relation between mixture ratios and marketing prices. Correlations between marketing prices versus some of the quality characteristics for both locations were assessed by correlation analysis, and the coefficients of correlation between marketing prices versus some quality characteristics were given in Table 3.

The coefficients of correlation for protein ratio (%) and hectolitre weights (g) versus marketing prices were positive and significant for Sanliurfa and Diyarbakir. However, these turned out to be negative and significant for 1000-kernel weights (g), starch (%) and above sieving characteristics. Hence, regression analysis was further performed to obtain the best equation for marketing price estimates. Regressions were significant for both Sanliurfa and Diyarbakir, giving $F=18.35**$ and $F=24.94**$ respectively. The regression equation was: $y=74.62**+3.99**x$ ($R^2% = 35.3$) in Sanliurfa (Figure 2). This was $y=74.46** + 2.86**x$ ($R^2% = 43$) in Diyarbakir (Figure 3).
This was $y=74.46^{**} + 2.86^{**}x$ ($R^2\%=43$) in Diyarbakir (Figure 3).

2017: Individual ANOVAs were performed and the treatments were found to be significant for Adıyaman ($F=2.76^{*}$), Sanliurfa ($F=22.61^{**}$) and Gaziantep ($F=20.8^{**}$) respectively. WHB (100%) received the highest marketing price ($/kg^{-1} 0.292$) in Adıyaman, whereas, in Sanliurfa and Gaziantep, BHB received the highest marketing prices of $/kg^{-1} 0.370$ and $/kg^{-1} 0.321$ respectively (Table 2c).

The coefficients of correlation between protein ratio (%), hectolitre weight (kg), 1000-kernel weights (g) and sieving characteristics vs. marketing prices are given in Table 3.
Table 2c. Entries and means of LSD groups for marketing prices of treatments in Şanlıurfa, Gaziantep, and Adıyaman in 2017.

| Marketing prices and groups (TL kg⁻¹ and US$ kg⁻¹) | Şanlıurfa | Gaziantep | Adıyaman |
|---------------------------------------------------|-----------|-----------|----------|
| Pure white                                        | 1.155f    | 1.118e    | 1.038a   | ($0.325) | ($0.315) | ($0.292) |
| 90%W + 10%B                                       | 1.188e    | 1.125d    | 0.990b   | ($0.335) | ($0.317) | ($0.279) |
| 80%W + 20%B                                       | 1.193de   | 1.128cd   | 0.990b   | ($0.336) | ($0.318) | ($0.279) |
| 70%W + 30%B                                       | 1.220cde  | 1.133bc   | 0.985b   | ($0.344) | ($0.319) | ($0.277) |
| 60%W + 40%B                                       | 1.233bc   | 1.134b    | 0.985b   | ($0.347) | ($0.319) | ($0.277) |
| 50%W + 50%B                                       | 1.258b    | 1.136ab   | 0.980b   | ($0.354) | ($0.320) | ($0.276) |
| Pure Black                                        | 1.313a    | 1.141a    | 0.973b   | ($0.370) | ($0.321) | ($0.274) |

LSD: 0.03; LSD=0.005; LSD=0.03; US$=3.55TL.

Table 3. The coefficients of correlations between marketing prices versus some quality characteristics in Sanliurfa, Diyarbakir in 2015 and Sanliurfa, Gaziantep, and Adıyaman in 2017.

| Characteristics | Sanliurfa | Diyarbakir |
|-----------------|-----------|------------|
| 2015            |           |            |
| Protein %       | 0.960**   | 0.984**    |
| HI              | 0.909**   | 0.898**    |
| 1000-kernel weights | -0.934** | -0.908**   |
| Starch%         | -0.962**  | -0.972**   |
| Above sieve > 2.5 mm | -0.944** | -0.983**   |
| Above sieve > 2.8 mm | -0.911*  | -0.975**   |

| 2017            | Sanliurfa | Gaziantep | Adıyaman |
|-----------------|-----------|-----------|----------|
| Protein %       | 0.789*    | 0.799*    | -0.548   |
| HI              | 0.995***  | 0.928**   | -0.814*  |
| 1000-kernel weights | -0.761* | -0.891**  | 0.740*   |
| Above sew > 2.5 mm | -0.923* | -0.807**  | 0.697    |
| Above sew > 2.8 mm | -0.974**| -0.851*   | 0.768*   |

Except for Adıyaman, the coefficients of correlation between proteins (%) versus marketing prices turned out to be significant for Sanliurfa and Gaziantep, giving r=0.789* and 0.799* respectively. On the other hand, the coefficients of correlation between hectolitre weights versus and marketing prices for all commodity markets were found to be significant, giving r=0.995**, r=0.928* and
r= -0.814* respectively. However, there was a negative correlation between ‘hectolitre’ weights versus marketing prices in Adıyaman, indicating the high ‘hl’ weight giving the less marketing price unexpectedly. The coefficients of correlation between grain weights (%) over 2.5 and 2.8 mm. sieving marketing prices were mostly negative and significant for all three commodity markets. Regression analysis between mixture ratios (%) versus marketing prices was further performed and regression was found significant for all commodity markets, giving F=69.04*** for Sanliurfa, 76.05*** for Gaziantep and 7.73** for Adıyaman respectively. Regression equations between mixture ratios versus marketing prices were: Y (marketing price) = 1.02**-0.0078**x (mixture ratio) for Adıyaman (%R²=22.9) (Figure 4); y=1.129**+0.0035**x for Sanliurfa (%R²=72.6) (Figure 5) and y= 1.116**+0.00357x** for Gaziantep (%R²=74.5) (Figure 6).

Figure 4. The regression line and equation for Adıyaman in 2017.

Figure 5. The regression line and equation for Sanliurfa in 2017.
Black barley grains were abundant and used to be offered lower marketing prices traditionally by both local purchasers and Turkish Grain Board (TGB). The research findings for marketing prices for 2005 confirmed the marketing price standards of TGB (Anonymous, 2005). TGB offered 0.281 US$ kg$^{-1}$ for white No.1 barley and 0.270 US$ kg$^{-1}$ for black No.1 barley in October, 2005. Namely, 0.011 US$ kg$^{-1}$ less purchasing price was offered for BHB than that for WHB. This was a traditional trend for barley marketing. BHB acreage and production were larger and higher than those of white due to relatively low irrigation possibilities in the region. Therefore, marketing prices of black type were lower than those of white barley. In 2008, an early drought occurred in February and March in southeastern Anatolia. BHB traditionally grown under rain-fed conditions in semi-fertile soils was affected severely and production was upside down in favour of white. The following year, farmers brought some similar types of black landraces from western transitional zones of Turkey. They were all alternative growing habit type cultivars and performed poorly and produced shrivelled grain in spring-type growing zones. They disappeared shortly. The scarcity of a genuine spring type of BHB in the region resulted in an increase in marketing prices. In 2015, BHB marketing prices were higher than those of WHB. Protein (%) and hectolitre weights (kg) were positively correlated with marketing prices, whereas 1000-kernel weights (g), starch (%), above sieve (%) $>2.5$ mm and above sieve (%) $>2.8$ mm had negative correlations versus marketing prices. The same trend occurred in both Sanliurfa and Gaziantep locations in 2017. In Adiyaman, a reverse situation was detected, where protein ratio (%) and hectolitre weights (kg) affected marketing prices negatively.

Adiyaman is the most rainfall receiving area with an average of 700 mm per year and located in the northern zone of SE Anatolia with about 700 m elevation from sea level. It is called the malting barley zone of Turkey. WHB dominates the
BHB with its high yield and high net return. So, BHB cannot compete with WHB in little colder and high rainfall zones. Some of the overlapping coefficients of correlation of some quality characteristics onto purchasing prices must be assessed carefully. Partial coefficients of correlations might turn from negative to positive or reverse. Taking into account the increasing acreage of irrigation opportunities in the region, in the near future, all the landrace BHB growing zones could be devoted to white-hulled landraces and modern WHB cultivars depending on lower yielding ability and susceptibility of BHB to lodging. This means that higher marketing prices of BHB may last longer due to the scarcity of adequate production. However, in the long term, the extinction of BHB in the region might occur. Therefore, from now on, the erect type and palatable BHB breeding must be initiated employing landraces. Moreover, BHB barley landraces must be released and conserved by gene banks for sustainable protection. Finally, regression equations between marketing prices versus mixture ratios in 2017 can be used for marketing price estimates reliably with higher coefficients of determinations in the region.

**Conclusion**

It was concluded that BHB, although having higher marketing prices than those of WHB, may not survive in the long term due to low yielding ability and consequently low net return. Furthermore, the WHB planting tendency of farmers and the increased irrigation facilities in south eastern Anatolia might speed up this inevitable end.

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Marketing prices in barley in South-East Anatolia; Black vs. White hulled

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Fethiye Ozberk et al.

TRŽIŠNE CENE BELOG I CRNOG OLJUŠTENOG JEČMA U JUGOISTOČNOJ ANATOLIJI

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Rezime

Ovo istraživanje je imalo za cilj da proceni prisustvo različitih odnosa crnih i belih oljuštenih zrna u isporukama ječma i njihov uticaj na tržišne cene. Istraživanje je sprovedeno na tržištu u Sanliurfi u jesen 2005. godine, na lokalnim robnim tržištima u Sanliurfi i Dijarbakiru u 2015. godini i u Sanliurfi, Adijamanu i Gaziantepu u 2017. godini. Pripremljeno je sedam uzoraka zrna ječma (100% belog [engl. white – W], 10% crnog [engl. black – B]+90% belog [W], 20%B+80%W, 30%B+70%W, 40%B+60%W, 50%B+50%W i 100% crnog). Uzorci su predstavljeni četvorici kupaca koji su slučajno izabrani sa svih robnih tržišta i oni su imali zadatak da boduju ponuđene cene. Sve veća ponuda crnog oljuštenog ječma postepeno je smanjila tržišnu cenu u 2005. godini. U 2015. godini, tržišne cene u Sanliurfi su bile 0,337 USD kg-1 za beli i 0,365 USD kg-1 za crni ječam, a u Dijarbakiru su bile 0,334 USD kg-1 za beli i 0,352 USD kg-1 za crni. U 2017. godini, osim u Adijamanu, tržišnih cena bile su više za BHB i iznosile 0,37 USD kg1 odnosno 0,321 USD kg-1 u Gaziantepu odnosno Dijarbakiru. U 2017. godini, tržišne cene beleg oljuštenog ječma iznosile su 0,325 USD kg-1 odnosno 0,315 USD kg-1 u Gaziantepu odnosno Dijarbakiru. Zaključeno je da su u jugoistočnoj Anatoliji, osim u Adijamanu, u posmatranoj deceniji, tržišne cene ječma koje su tradicionalno bile više za beli oljušteni ječam, bile više za crni oljušteni ječam.

Ključne reči: JI Anatolija, crni oljušteni ječam, lokalne sorte, tržišna cena, beli oljušteni ječam.

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