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The effect of agricultural credit usage on the socio-economic indicators of apricot farmers: A case of mut district of mersin in turkey

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Abstract

In this study, the relationship between the socio-economic characteristics of apricot growing farmers who used agriculture loan and non-use in the case of Mersin province Mut district was discussed. The stratified sampling Neyman method was used to determine the sample farmer volume in the Mut district. The farmer number was calculated to be 91 in the confidence interval with 5% of the average, the margin of error and 90%. Data from this number of farmers was obtained by face-to-face survey method. The data set included the 2016 production period. The rate of farmers who used credits in apricot production was 32.97%. Farmer age, farmer's level of education, household size, experience in apricot cultivation, total farmland, apricot land, unit production cost of apricot and apricot sale price are higher in farmers who use credit. However, the apricot yield per unit area is also lower.

Keywords: *Apricot, agricultural credit, farmer, cost, Mut*

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Introduction

Turkey has an important position based on the apricot production in the world and export and ranks first in the world in terms of these indicators (Gül and Akpınar, 2006; Akpınar et al., 2006).

Mersin is located in the second position in term of the apricot production in Turkey. The share of Mersin in Turkey apricot planted area of the province ranged from a 6.32% to 4.34% between the years 2004-2018, was 5.72% in 2018. Its share in production varied between 6.17% and 41.38%. In 2018, the figure was 11.91%. The planting area has increased with each passing year. However, production varies depending on climate conditions. In 2018, apricot production reached to 89300 tons.

Apricot production of Mersin districts in 2018 is given in Table 1. In the district of Mut, 70246 tons of apricots were produced on an area of 55740 decare. Mut district is in the first place in terms of apricot planted area and production. Mut district's share in the apricot planted area of Mersin has changed between 76.57% and 86.90% between 2004-2018 and realised as 77.52% in 2018. Its share in production varied

between 69.46% and 88.60% between 2004-2018. In 2018, it was 78.66%.

Therefore, Mut is a district that meets almost all of Mersin apricot production. This district is followed by Tarsus with 9.85%, Gülnar with 3.19% and Akdeniz with 2.43%. At this point, Mut district was chosen as the sampling area.

Developments in apricot production and planted area in Mut district in 1995-2018 were given in Table 2. About 14650 tons of apricot production was realised in 21640 decare area in 1995. In 2018 compared to this year, planted areas increased by 2.58 times and increased to 55740 decare, and production increased by 4.79 times and reached to 70246 tons. Fluctuations in the apricot production of district were involved, and one of the most important reasons is the frost event in spring period.

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Table 1. Apricot production in districts of Mersin province

District	Harvested area (decares)	Share in the harvested area (%)	Production (ton)	Share in the production (%)
Mut	55.740	77.52	70.246	78.66
Tarsus	7.081	9.85	9.295	9.85
Gülnar	3.050	4.24	2.846	3.19
Akdeniz	3.082	4.29	2.170	2.43

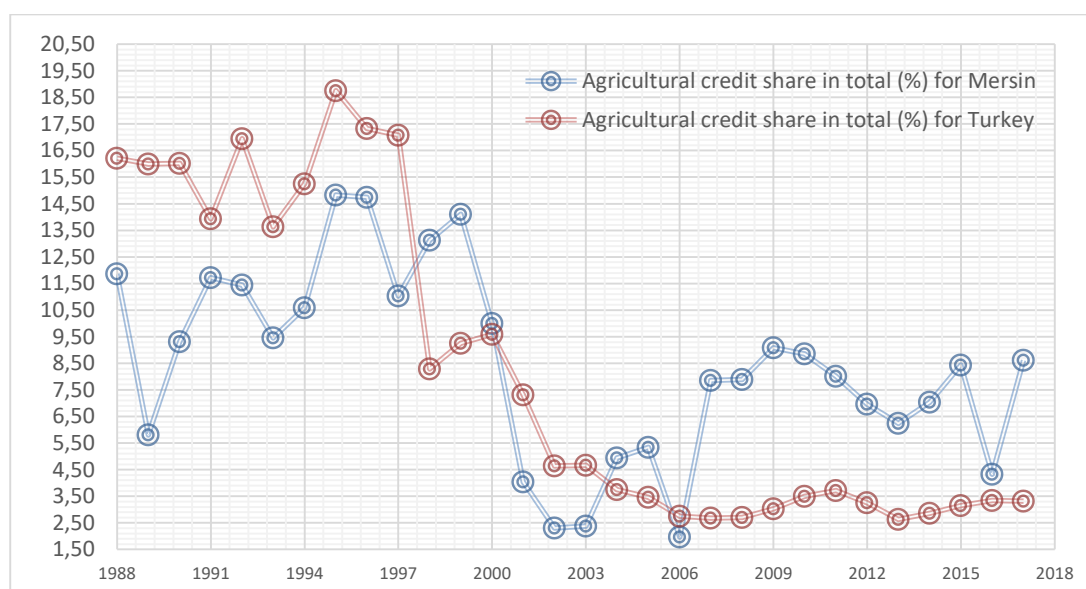
TURKSTAT, 2019

Table 2. Apricot production and planted areas in Mut district of Mersin

Years	Harvested area (decares)	Area index (1995=100)	Production (ton)	Production index (1995=100)
1995	21.640	100	14.650	100
2000	31.130	144	42.100	287
2005	46.750	216	48.739	333
2010	52.228	241	39.195	268
2011	55.240	255	40.166	274
2012	55.240	255	35.166	240
2013	55.684	257	80.646	550
2014	55.240	255	93.861	641
2015	55.240	255	90.280	616
2016	55.240	255	85.460	583
2017	54.456	252	70.621	482
2018	55.740	258	70.246	479

TURKSTAT, 2019

Agricultural credit was about 24.26 billion in 1988 increased by 181.6% and exceeded approximately 68.24 billion TRY in 2017 with real prices (2003 PPI = 100 were calculated based on prices of 2017) in Turkey. On the other hand, as a result of the need for credit in other sectors and the further development of other economic indicators (Gürbüz and Gül, 2016), the share of agriculture in total credits decreased from 16.2% to approximately 3.3%. A similar situation exists in Mersin. The amount of credits used by the agricultural sector in the province in 1988 was around 216 million TRY. In this year, 11.87% of total loans were in the agriculture sector in the province. This value decreased to 8.62% in 2017. Agricultural credits have decreased proportionally in the last twenty-nine years in both Turkey and Mersin. However, the amount of agricultural credits in Turkey increased by 186% in 2017 compared to 1988, increased by more than ten times in Mersin. The proportional share of agricultural credits in Mersin was above the average of Turkey between 2007 and 2017 (Figure 1). While the share of agricultural credits in Mersin province of Turkey was 0.89% in 1988, it increased to 3.31% in 2017. The share of agricultural credits in Mersin province of Turkey has been at the level of 3% in average between 2007 and 2017 (Figure 2).

**Fig. 1.** Agricultural credit share in total credit (%), Data is calculated depend on Anonymous, 2019**Fig. 2.** Mersin's agricultural credit share in Turkey (%), Data is calculated depend on Anonymous, 2019

Therefore, this study aimed to investigate the relationship between the credit usage of apricot farmers in the

Mut district of Mersin and the socio-economic characteristics of farmers.

Materials and Methods

The primary material of this study was obtained from the farmers who grow apricots in Mut. The stratified sampling Neyman method was used to determine the sample farmer volume in the Mut district. The farmer number was calculated to be 91 in the confidence interval with 5% of the average, the margin of error and 90%. Data from this number of farmers was obtained by face-to-face survey method. The data set included the 2016 production period. A Single Product Budget Analysis method was used in the cost analysis of farmers. Gross production value includes the sales value of the agricultural products of the farmer, and increases in the productive value (Erkuş et al., 1995). The determination of the debts of the enterprise was based on the declaration of the farm owner. In the calculation of the labour

of the farm owner and family members, the daily wage paid to the local labour force was taken as a precedent. 3% of the total changed cost was taken as general administrative expenses (Kıral et al., 1999). Gross profit was calculated by subtracting the variable cost from the gross value of production, and net profit was calculated by subtracting production costs (Aras, 1988). The relative profit was calculated by dividing the gross production value by the cost of production (Kıral et al., 1999). Also, the Chi-square test was used to determine relationships between observed variables. For continuous variables, variance analysis was performed. Analysis of variance was used to test hypotheses about whether the difference between the means of two or more groups is significant (Özdamar, 1999).

Results and Discussion

32.97% of the surveyed farmers used agricultural credits (Table 3). Demirtaş (2000) calculated the loan uses the ratio as 30,86% in the same region.

Table 3. Agricultural credit usage status

	N	%
Credit user	30	32,97
Non-user	61	67,03
Total	91	100,00

The age, educational level, experience of apricot production activities, household size, non-agricultural business ownership of the owners of apricot production activities were examined.

The average age of farmers using credit in the research area was 49 years, education level was 7,37 years, household size was 4,47 people, and experience in apricot production was 19 years (Table 4). It was determined that household size, experience and education level were higher in farmers using credit than non-credit farmers. However, these situations were not statistically significant. Demirtaş (2000) calculated household size as 5,43 in the same region.

The rate of a non-agricultural job of farmers using credit is 36,67% and the rate was 29,51% for non-credit farmers (Table 4). Farmers using credit had a higher rate of non-agricultural job. The share of non-agricultural incomes in total revenues was 12,25% compared to those who do not use credit (7,69%). There was also a statistically significant difference between non-agricultural income level and credit usage status ($\alpha = 0,10$; $F_{\text{calculated}} > F_{\text{table}}$; $3,328 > 2,748$).

On average, it was calculated that the apricot land owned by the enterprise consisted of 2,80 parts, whereas the farmers who did not use credit was 1,97 pieces (Table 4). A statistically significant difference was found between the pieces of apricot fields and credit usage status ($\alpha = 0,05$; $F_{\text{calculated}} > F_{\text{table}}$; $5,89 > 3,95$).

The averages of agricultural land for farmers using and not using loans were 48,79 and 32,99 decare, respectively. 92,62% of the farmland was irrigated in farmers using credit and the rate of irrigated land was 86,24% for those who did not use credit. 94,81% of the farmland was own land of using credit farmers, and 81,34% of those who did not use credit were owned land (Table 4).

The average of the farmers using credit was 33,45 decare apricot land, and this value was 20,11 decare apricot land for non-credit farmers. 68,57% of the total farmland was apricot land for credit users and 60,97% for non-credit users. 4,98% of apricot land was renting land for farmers using

credit, and renting area was 18,22% for those who did not use credit. 95,02% of total apricot land was owned land in the farmers using credit, and this value was 81,05% for farmers who did not use credit. For those who did not use credit, 2,53% of the total apricot land was shared land (Table 4).

Demirtaş and Gül (2003) found that farmers had 15,19 decare apricot land in the same region.

Gross production value is calculated by adding annual productive value increases in crop and animal production to the value obtained by multiplying the production amounts of plant and animal products produced by agricultural enterprises within the year with the prices of the farmer (Açıl and Demirci, 1984; Erkuş et al., 1995).

Apricot gross production value was 69.31% of the total gross production value and 57,90% of the farmers who did not use credit (Table 4).

Those who use credit have a higher rate of record keeping in agricultural work (30%). Their participation in training on apricot (23,33%), computer ownership (40%), internet ownership (43,33%) and soil analysis rate (30%) were higher compared to non-credit users. There was a statistically significant difference between farmers using and not using credit in term of record keeping, computer ownership, internet presence, soil analysis, agricultural organisation rate and credit usage status (χ^2 p-values < 0.05).

Table 4. Socio-demographic-economic factors with credit groups

	Credit user	Non-user
Farmers age (year)	49.00	48.49
Farmers education level (year)	7.37	7.10
Household size (head)	4.47	4.16
Farmers experience in apricot production (year)	19.00	18.39
Family education (%):		
Illiterate	0.79	1.30
Literate	2.36	2.60
Primary	43.31	49.35
Secondary	15.75	13.42
High school	22.83	17.32
Junior college	4.72	5.19
University	10.24	10.82
Total owned land (%)	94.81	81.34
Rented land (%)	5.19	16.47
Irrigated land (%)	92.62	86.24
Non-irrigated land (%)	7.38	9.99
Apricot land in total farmland (%)	68.57	60.97
Total apricot owned land (%)	95.02	81.05
Apricot rented land (%)	4.98	18.22
Apricot shared land (%)	0.00	2.53
The share of apricot production value in total gross production value (%)	69.31	57.90
Share of non-agricultural income in total income (%)	12.25	7.69
Parcel numbers of apricot area (per)**	2.80	1.97
Apricot area (decares)**	33.45	20.11
Record keeping in apricot growing (%)**	30.00	9.84
Participation in training activities for apricot cultivation (%)	23.33	14.75
Non-agricultural business (%)*	36.67	29.51
Computer ownership (%)*	40.00	22.95
Internet ownership (%)**	43.33	22.95
The number of the farmer who soil analysis (%)**	30.00	9.84
Membership of an agricultural organisation***	90.00	29.51

*, Significant at 90%; **, Significant at 95%; ***, Significant at 99%

Variable costs are costs that increase or decrease depending on the volume of production. These costs arise when production is made. Production varies depending on the amount (İnan, 2001). Total production cost in apricot cultivation was calculated as 1345,50 TRY/da on average for

farmers using credit and 1287,92 TRY/da on average for non-credit farmers (Table 6). The share of the variable cost was 59,58% and 57,34% among those who used credit in apricot production (Table 5). Among the variable cost items of the farmers in question, the highest rate of agrochemicals, fertiliser and labour costs were obtained (Table 5).

Fixed costs, on the other hand, are defined as the costs that do not change depending on the production volume, whether they are produced or not (İnan, 2006).

In this study, fixed cost components in apricot production; general administrative expenses, land tenure, family labour, depreciation of establishment costs and the interest of establishment capital. The share of fixed costs was calculated as 40,42% in the average of the farmers using credit interviewed in apricot production and 42,66% in the non-credit users (Table 5). The highest share of fixed-cost items in apricot production of farmers using credit interviewed received land rent with 15,09%. The depreciation of establishment costs followed this at 10,32% and the interest of establishment capital at 9,03%. Those who did not use credit were the most important fixed cost elements, and their shares were 16%, 10,78% and 9,43% respectively (Table 5). In the interviewed farmers, the most critical cost element in the apricot production process was a variable cost. The most important cost elements were agrochemicals with 20,35%, land rent with 15,09%, fertiliser with 13,12%, depreciation of establishment costs with 10,32% (Table 5).

In the non-credit farmers, the most critical apricot production cost elements were land rent with 16%, agrochemicals with 13,74%, fertiliser with 12,47%, paid labour with 12,37%, depreciation of establishment costs with 10,78% (Table 5).

There was statistically significant difference between paid labor and marketing cost and credit usage status ($\alpha = 0.05$; $F_{\text{calculated}} > F_{\text{table}}$; $10,553 > 23,95$). The rate of paid labour cost and marketing cost was lower among farmers using agricultural credit.

Demirtaş and Gül (2000) found that farmers' fixed cost share was 39,70% and variable cost share was 60,30% of the total apricot production cost in the same region.

Table 5. Production cost in apricot growing (%)

Cost items	User	Non-user
Machnirey rent	7,83	8,20
Labour***	8,55	12,37
Fertiliser	13,12	12,47
Irrigation	6,47	6,01
Agrochemicals	20,35	13,74
Marketing**	1,80	3,14
Revolving fund interest	1,45	1,40
Variable cost	59,58	57,34
General administrative expenses	1,79	1,72
Land tenure	15,09	16,00
Family labour	4,19	4,72
Depreciation of establishment costs	10,32	10,78
The interest of establishment capital	9,03	9,43
Fixed cost	40,42	42,66
Total production cost	100,00	100,00

, Significant at 95%; *, Significant at 99%

The gross production value obtained by the usage the agricultural credit of farmers was 1877,25 TRY per decare in the production of apricot. The gross production value obtained by farmers who did not use agricultural credit

in the production of apricot per decare was determined as TRY 1813,81 (Table 6).

Gross profit in apricot-grown farmers was calculated by subtracting varying costs from gross production value (Açıl and Demirci, 1984). Accordingly, gross profit per decare was calculated as 1075,55 TRY on average for farmers using credit. The average gross profit value per decare of farmers who did not use credit was 1075,31 TRY (Table 6). 10% of farmers using credit and 14,75% of non-users credit farmers received a negative value of gross profit from apricot production. In other words, 10% of farmers using agricultural credit and 14,75% of non-credit farmers could not meet the variable costs of apricot production.

Absolute (net) profit was found by subtracting the total production cost for apricot production from the gross production value (Kıral et al., 1999). One of the main objectives of the business is to make a profit, but also to find ways to make this profit the highest. The average absolute profit of farmers using agricultural credit in apricot production was calculated as 531,75 TRY per decare. For farmers who did not use agricultural loans, the absolute profit per decare was found to be 525,89 TRY (Table 6). The absolute profit value obtained from apricot production was negative in 26,67% of the farmers using agricultural credit. In 37,70% of farmers who do not use agricultural credit, the absolute profit value obtained from apricot production was negative. Thus, about 27% of farmers using agricultural credit and about 38% of farmers not-user were a loser from apricot production. There is a statistically significant difference between absolute profit per decare and credit utilization ($\alpha = 0.10$; $F_{\text{calculated}} > F_{\text{table}}$; $3,328 > 2,748$). Farmers using agricultural credit had high absolute profits.

The relative profit was found as the ratio of gross production value to production cost. Relative profit is proportional to how much one option is superior to the other. Relative profit measures the return on production activities better (Kıral et al., 1999). In apricot cultivation, the relative profit was calculated as 1.40 for credit-using farmers and 1.41 for non-credit farmers (Table 6).

The relative profit value calculated on the average of farmers in apricot production for 2016 production season shows that apricot production activity was profitable. As a matter of fact, in the apricot production of the farmers using agricultural credit during the survey period, the gross production value of 140 TRY was obtained for every 100 TRY production cost. Therefore, 40 TRY profit was generated for every 100 TRY production cost. In apricot production of farmers who do not use agricultural credit, gross production value of 141 TRY was obtained for every 100 TRY production cost. Therefore, a profit of 41 TRY was provided for each production cost of 100 TRY.

However, more than 30% of farms in the region had a loss. Also, high-profit was available on some farms.

Demirtaş (2000) calculated the relative profit as 1,39 in the same region. Gül and Demirtaş (1998) found that real apricot sale price fluctuates depending on the production in 1988-1997.

Farmers using agricultural credit for the 2016 production season had higher production costs per kg, kg sales price and kg profit margin in apricot production. However, these situations were not statistically significant.

In the 2016 production season, farmers using agricultural credit had lower yields per decare in apricot production. The production cost per decare and the gross

production value in farmers using credit were higher than non-user. However, these situations were not statistically significant.

Table 6. Some economic indicators in apricot growing

	User	Non-user
Yield per decares (kg)	731,08	780,87
Production cost per decares (TRY)	1345,50	1287,92
Gross production value per decares (TRY)	1877,25	1813,81
Gross margin per decares (TRY)	1075,55	1075,31
Net profit per decares (TRY)	531,75	525,89
Relative profit	1,40	1,41
One kg cost (TRY)	1,84	1,65
One kg selling price (TRY)	2,57	2,32
Profit margin	0,73	0,67

1 USD equal 3.02 TRY for 2016 average

Conclusion

In this study, the effect of agricultural credit utilisation on the socio-economic indicators of the farmers in the Mut district of Mersin province was investigated.

Farmer age, farmer's level of education, household size, experience in apricot cultivation, total farmland, apricot land, unit production cost of apricot, and apricot sale price are higher in farmers who use credit. However, the apricot yield per unit area is also lower.

It is also essential to disseminate consultancy and agricultural extension services in the region. Thus, the yield of the unit area can be increased. Improvements in credit usage in the production can increase the farmer's income.

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