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Determination of the Problems Seen in Chickpea Production Areas in the Central Black Sea Region in Türkiye

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ABSTRACT

The aim of this study is to determine some crucial issues in chickpea farming and some characteristics of chickpea producing agricultural enterprises in Samsun, Amasya, and Tokat provinces in the Middle of Black Sea Region in Türkiye. For this purpose, 3 districts where chickpea production is made in these provinces were selected and a survey study was conducted according to the sampling system. Frequency analyzes were made according to simple statistical methods in Microsoft_Excel and the problems encountered were evaluated according to weighted rating. Thus, it has been tried to determine the problems encountered in chickpea production in the region and according to separate provinces. The survey was revealed that the major issues are 45% disease (chickpea blight), 21.47% vertebrate (pig) damage, 8.59% effect of marketing, 7.09% weed infestation, and 6.66% in the ecological conditon, according to the weighted grading. Expensive input was one of the most important problems affecting chickpea production intensively. The 70% of landowners has 0.8-10 ha small-size farm and the farms consisted of multi-part structures. The result of the survey study was illustrated that major problems are small size farm plots, elder farmers which the average age of the over 50 years old, and the unsuitable mechanization due to slopping land in chickpea farms.

Keywords: Chickpea, survey, chickpea producer problems

Introduction

Chickpea is located in the Eastern Mediterranean region, where Türkiye is the gene center, and it is one of the first cultivated plants (Akçin, 1988). Dry seeds contain a high percentage of protein (15-32%) and carbohydrates (50-74%), as well as minerals such as phosphorus, calcium and iron, and their richness in vitamins A, B and Niacin make them an important place in people's diets (Smithson et al., 1985). Despite their high protein content, legumes have very low cholesterol levels. In Türkiye, people obtain 80% of their daily protein needs from plantal products and 20% from animal products. Legumes such as beans, chickpeas, and lentils are the most important plantal protein sources (Onder, 2015).

Chickpea is very content in terms of soil demand and stands out among the legumes with its resistance to lime and salinity. Although chickpeas grow well in light, calcareous sandy soils, the ideal growing soil is sandy-loam soils. It does not like very acidic soils (Onder, 2015). In addition to having small green parts, it is also drought resistant thanks to its taproot system. In addition to the nitrogen binding of the *Rhizobium* bacteria in its roots to the soil, it gains importance in terms of development time and productivity (Eker,2019). In Türkiye, edible legumes were planted in a total area of 871.134 hectares in 2020. As of the same year, the total cultivation area of chickpeas in the country is 511.561 ha and the production is 630.000 tons. With these values, chickpea has become the most planted and produced edible legume in Türkiye (TUIK, 2021).

In spite of the fact that the Black Sea Region provides 9% of Türkiye's production in terms of chickpea

production (Anonymous 2007), this value has decreased to 5% (Burucu 2020). A total 98% of production is provided by the Central Black Sea Region, which is enclosed by Samsun, Amasya, Corum and Tokat. Continuous cultivation of grain on the same land such as monoculture, especially wheat, causes deterioration of soil structure. Therefore, legumes should be grown in rotation with grains. In order for the crop rotation system to be successful in cereals, suitable annual legumes are needed. Chickpea is one of the main crops grown alternately with cereals in dry agricultural areas in order to meet marginal land use, reduction of fallow lands, its place in crop rotation and farmers' own needs.

There are various natural, economic or socio-economic factors that restrict chickpea production in Türkiye and all over the world. For example, anthracnose disease [*Ascochyta rabiei* (Pass) Labr.], which is a biological factor, has a direct effect on the cultivation area and especially the production amount. Although there is product loss at varying rates depending on the severity of the disease, product loss can reach 100% in some years (Düzdemir et al., 2008). In the research carried out to determine the mechanization problems in chickpea farming in Erzurum region, the problems in chickpea farming; it has been emphasized that it will be possible to solve it with complementary approaches that include breeding, agronomy, climate and soil conditions, appropriate planting, maintenance techniques and the socioeconomic structure of the farmers (Guler, 2011). The problems of dry bean production were determined in Konya conditions, it was determined that the farmers were insufficient in planting frequency, fertilization, irrigation, disease and pest control practices (Önder et al., 2012). It has been stated that in order to produce a quality bean in the region, the deficiencies determined in the knowledge level of the farmers in terms of cultivation techniques should be eliminated (Önder et al., 2012). Future projections were developed for the sales markets of chickpeas, lentils and dry beans grown in Türkiye, it was determined that between 2017-2021, the cultivation areas of chickpeas, red lentils and dry beans in Türkiye, the production amount and exports will decrease, consumption amount, import and producer prices will increase (Doğan et al., 019). The supply-demand balance will shift to the supply side, this shift will result from the increase in imports, not from the increase in production, and that foreign dependency in legumes will increase (Bolat et al., 2017). Ozturk (2019) reported that the investigating the economic status of chickpea cultivation in the Seydisehir district of Konya province; it has been determined that the enterprises producing chickpeas have an average of 5.68 ha farm land. The same researcher also stated that in these enterprises, producers must produce consciously and in accordance with the technique in order to make a profitable production.

In this study, it is aimed to determine the problems encountered in chickpea production and some characteristics of chickpea producing agricultural enterprises in Samsun, Amasya, and Tokat provinces located in the Central Black Sea Region.

Materials and Methods

This study was carried out in Samsun, Tokat, and Amasya between 2014 and 2016. The survey study in the study was carried out according to random sampling. The survey study was carried out according to random sampling. The survey studies of this research were carried out in 72 randomly selected agricultural enterprises producing chickpea in 10 districts of Samsun, Tokat, and Amasya provinces (Table 1).

In order to determine the problems related to chickpea farming in the region on the basis of "volunteering", questionnaires prepared from questions containing some demographic and business information of the producer and basic chickpea farming information were used.

In the study, the questions asked to business owners in the survey are presented in Table 2 below. In Microsoft_Excel, frequency analyses were performed according to simple statistical methods and the problems encountered were evaluated according to the weighted rating.

Results and Discussion

Number of Individuals in the Business:

It has been determined that the number of individuals in the surveyed businesses ranked between 5 and 18 people. When the distribution of the number of individuals to the enterprises is examined, the number of individuals varies between 5-6 people in 38.0% of the enterprises. This was followed by families of 3-4 with 19.1% and families with 1-2 persons with 17.5%. Businesses with 11-12 and 13-14 individuals gave the lowest frequency value with 1.6% (Figure 1).

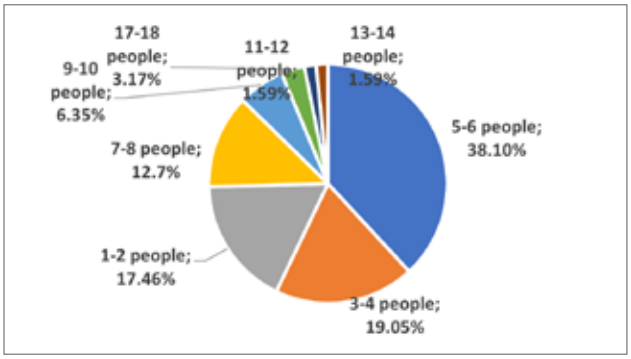

Figure 1. Frequency values of the number of family members of businesses

Education Levels of Farmers:

Considering the education levels of the individuals working in the farms, it is seen that all of the household heads are literate, 75% are secondary school graduates, 7.1% of the spouses are illiterate and 82% are secondary school graduates. When the education levels of the children in the enterprises were examined, it was determined that approximately 5.3% of them were illiterate. However, it is possible that these children are at pre-school age (0-6 years old), 81% of them are secondary school graduates. Considering the level of consciousness, it was striking that the ratio of household heads (5%) and children (1.79%) who received university education was very low (Figure 2).

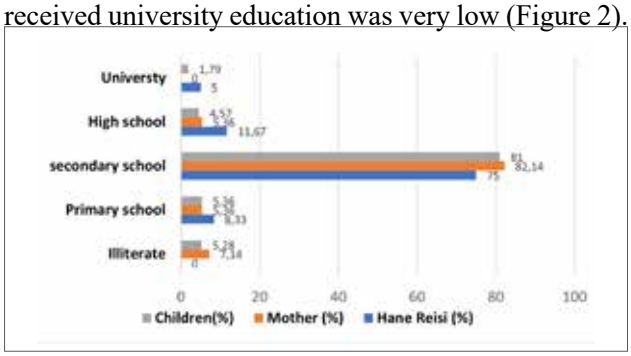

Figure 2. Frequency values of educational status of families in the farms studied.

Occupational Status of the Individuals on the Farm:

While 93% of the surveyed producers are only farming based on crop production as a profession, the others are engaged in civil servants, tradesmen and animal husbandry as an additional job besides farming. When the spouses of the producers were examined, it was seen that 62% of them carried out farming and animal husbandry together. While 7.1% of the rest of the spouses contribute to the economic situation by working in the civil servants, tradesmen and private sector, 33.3% are housewives who do not belong to any occupational group. While 12.9% of the children contribute only through farming, the remaining part is in an effort to take part in different sectors (Figure 3).

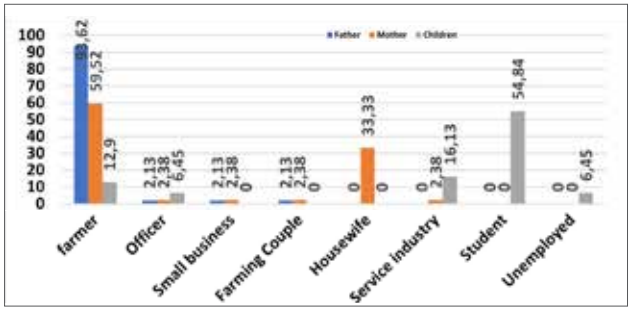

Figure 3. Occupational status frequency values of individuals in enterprises.

Chickpea farming majority is family farms in Türkiye. In particular, the level of education is very important for producers to be open to innovations, to adopt chickpea cultivation techniques and to put them into practice. A total 75% of the producers and 82% of their spouses in the research area are secondary school graduates. 93% of the surveyed producers are only farming based on crop production as a profession. While 62% of the wives of the producers are engaged in farming and animal husbandry together, almost 1/3 of the wives (33.33%) are housewives who do not directly contribute to production. A significant part of the children of producers are trying to take place in areas other than the agricultural sector.

Karabak and Cevher (2002) stated in their study in Central Anatolian conditions that the producers of chickpeas and lentils concentrated in the 36-55 age group and that the producers reduced the production of chickpeas and lentils at advanced ages. The researchers determined that 68.9% of the subjects were primary school graduates, 14.4% were secondary school graduates, and 4.4% were graduates of college or university. They also determined that chickpea and lentil cultivation decreased as the education level of the producer increased in the region. 82% of the producers in the region are only farming, 18% are self-employed and civil servants besides farming.

In a study conducted in Konya-Seydişehir, it was determined that 48.8% of chickpea producers were primary school graduates, 7.6% secondary school, 30.2% high school, 13.4% college or faculty graduates (Oztürk, 2019).

The human resources of the enterprises in the research area; Similar to the results of previous research, it consists of people who do not have higher education, most of whom are only farming as a profession. It was previously emphasized in Düzdemir et al. (2008) that the knowledge and economic levels of chickpea growers with low education levels are not sufficient to make decisions in production, therefore they mostly use traditional chickpea growing methods.

Agricultural Land Assets of Farms (Da):

While 42% of the examined enterprises have 0.9-5 ha land assets, 21% have 5-10 ha, 8.7% 10-15 ha, 14.0% 15-20 hectares and 1.8% of them have 60 hectares of land (Figure 4).

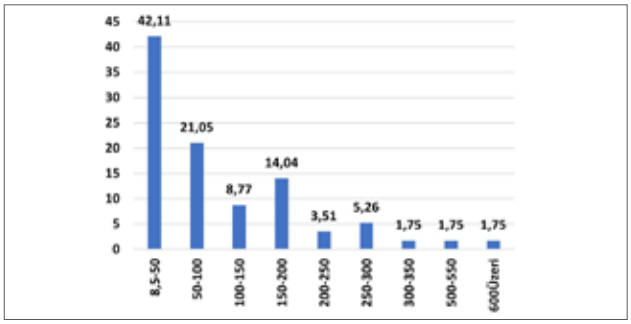

Figure 4. Size (Decare) of land in surveyed farms.

The existence of land is important in terms of operating agricultural parcels, using an efficient agricultural mechanization, highly competitive production in small farms and increasing the cost of activities such as irrigation investments (Eren, 2021). Ozkaya (1996) emphasized that the criterion in determining the development of small enterprises is the width of the soil used by the enterprises, but there may be different classifications according to whether this land is wet or dry. According to 2017 Farmer Registration System data, the average land assets of agricultural enterprises in Türkiye is 70 decares (Anonymous, 2019). Of the enterprises in the research area, 24.5% proportionally have land assets above the average of Türkiye. The vast majority of the remainder operate on farmland equal to or less than this average. It is not possible to realize a modern and efficient agricultural production in these farms.

Rotation Planning in Farms:

The enterprises in the research area consider various reasons when determining their planting systems. If Figure 5 is examined, it will be seen that the surveyed enterprises place chickpeas in single, double, and triple rotation systems. While chickpea is mostly included in rotations created with wheat, it can also alternate with irrigated plants such as sugar beet and vegetables. Chickpea is mostly grown in arid and marginal areas in Türkiye. In the areas where the research was carried out, the dominant plant of the arid areas is wheat. Rotations with wheat are mostly done in arid areas. Wheat-sunflower-chickpea, wheat-onion-chickpea, wheat-sugar beet-chickpea, wheat-bean-chickpea and wheat-poppy-chickpea rotations are also applied in the enterprises.

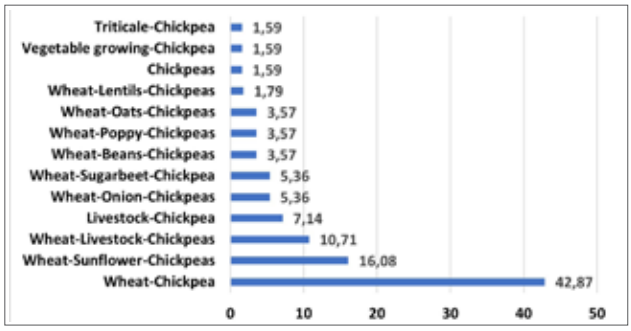

Figure 5. Frequency values of the plant groups entering the crop rotation with the chickpea plant.

Karabak and Cevher (2002), in their study in Central Anatolian conditions; that the producers in the region mostly use wheat/legume (chickpea-lentil) double rotation; however, they emphasized that the triple systems of wheat/legume/fallow and wheat/chickpea/forage crops are also common in the Central Anatolia Region. In the area where we conducted our research, the producer mostly preferred the rotation with wheat. However, it is used in different triple systems according to the irrigation possibilities in the region.

The Most Preferred Pre-plant in Chickpea Agriculture

When the products grown in the farms were listed during the study period, wheat was the most commonly grown crop. Since wheat is mostly grown in arid areas, chickpea comes in second place because it is the plant that has the most alternation with wheat in the crop rotation system. These plants are followed by vetch, barley and sunflower, respectively (Figure 6).

The presence of water is also effective in the selection of other plants preferred for production besides chickpeas. Karabak and Cevher (2002) found that wheat, barley, green lentils, and red lentils are the most grown products in these areas, along with chickpeas, in their study in Central Anatolian conditions dominated by dry agricultural areas.

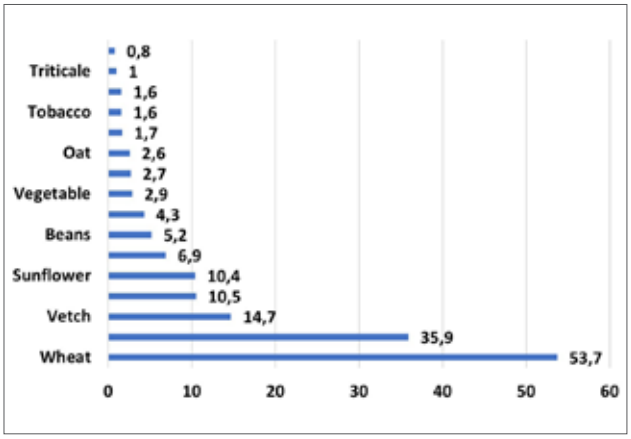

Figure 6. Frequency value of the most preferred products in farms together with chickpeas.

The 20 most preferred products in the enterprises examined in the research conducted by the Credit Bureau of Türkiye (2019) at the level of Türkiye, Wheat, Barley, Corn, Tomato, Alfalfa, Oats, Pepper, Potato, Sugar Beet, Sunflower, Watermelon, Bean, Cotton, Olive, Melon, Chickpea, Vetch, Onion, Grape, Cucumber. The finding we obtained in our research area is compatible with both literature reports.

However, since the region we are researching is between the transitional climate and the Black Sea climate, and receives higher amounts of precipitation than the Central Anatolian conditions, it shows more similarity with the results of the Credit Records Bureau research.

The most important factor in the emergence of this situation is undoubtedly the availability of water and irrigation facilities in the region.

Total Cultivation Areas in Farms by Plant Types (da):

When products are listed according to planting areas in farms, wheat takes the first place. It was followed by sunflower, vetch and barley. Chickpea, which was in the second place in the list of the most preferred products, fell to the fifth place in the total cultivation area. It can be said that the main reason for this decline in chickpeas is that sunflower, vetch and barley are preferred more than chickpeas in alternation with wheat in enterprises with large land assets. Chickpea cultivation is carried out in smaller farms and in arid areas (Figure 7).

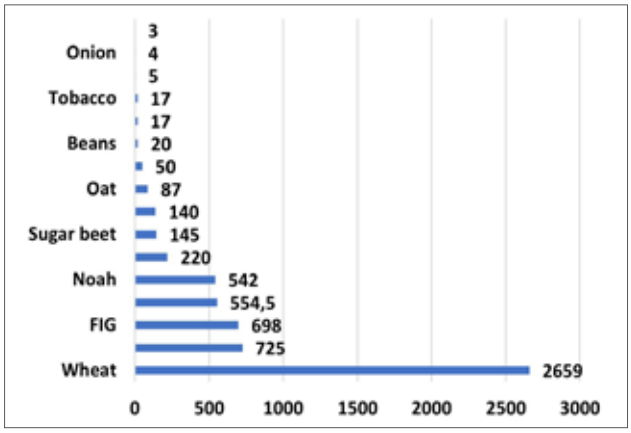

Figure 7. Cultivation area (da) by plant species in farm

Karabak and Cevher (2002) focused on their study on Central Anatolian chickpea and lentil production, found that the common plant in the total cultivation areas in the study area is wheat (50.0 %), followed by barley (18.0% and chickpea (12.0 %). In the research conducted by the Public Credit Bureau (2019), at the level of Türkiye, Wheat ranked first with an average cultivation area of 11.5 hectare, while chickpeas ranked second with an average cultivation area of 10.6 hectare.

In the same study, chickpea was ranked 15th with 5.6% among the 20 most cultivated products, while it was the second product with the highest average area in terms of average cultivation area. In our research, chickpea came after wheat, sunflower, vetch and barley with 542 decares in the researched enterprises. Although chickpea cultivation requires intensive labor, it has become one of the important crops that are in rotation with wheat in dry areas, especially due to the fact that mechanization has begun to be used in harvest and the use of herbicides in weed control has become widespread. For this reason, chickpea is one of the prominent plants in terms of cultivation area in regions where dry agricultural areas are common. Our findings support the literature.

Type of Seed Used by Chickpea Producers

While 35.21% of chickpea producing enterprises preferred Spanish grain type chickpeas, 25.35% preferred domestic types. Although 34% of the enterprises obtained the seeds from previous years, they used the seeds of the registered varieties (Figure 8).

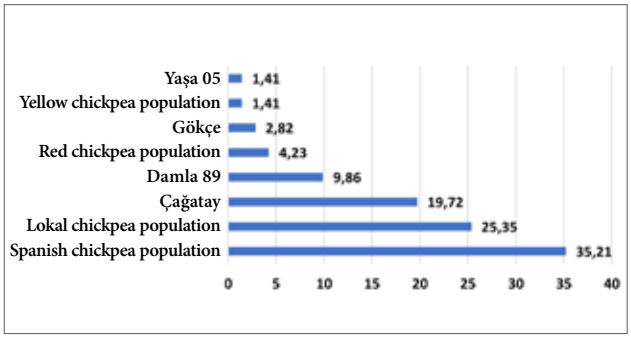

Figure 8. Frequency values of varieties used by chickpea producers.

When we look at the varieties used by the chickpea production enterprises in the survey area, it is seen that the mostly Spanish seeds and village populations are used. It is followed by a local variety, "Yerli" and a registered variety "Çağatay". In addition to the Spanish, Native, Red and Native Yellow Chickpeas, which are popular in the region, the registered varieties of Çağatay, Damla-89, Gökçe and Yaşa 05 were also preferred seeds. The prevalence of local populations in the region also affects the yield; plays an important role in the producer's overall low yield. This is a common situation in chickpea cultivation in the country. For example, in a study carried out in Central Anatolian conditions, it was seen that breeders preferred local populations called Spanish and Native in addition to registered varieties. Producers also used Damla-89 and Gokce registered varieties (Karabak and Cevher, 2002). In our study, it will be easily seen that the cultivar preferences of the breeders are very similar to the breeders' preferences in previous years. Karabak and Cevher (2002) stated that 85% of the producers in their study do not use certified seeds in chickpeas and lentils, due to the fact that certified seeds are expensive (69.9%), not available (18.8%) and lack of knowledge about seeds (8.3%) tied. Ozturk (2019) stated that the businesses in the Seydisehir region do not demand the certified seed too much, that the producers mostly prefer Gökce and very few of them prefer Aksu varieties.

Seed Supply Places of Chickpea Producing Farms

A total 59.7% of chickpea producing farms in the region separate their seeds from the previous product. 19.0% of the enterprises obtained their seeds from trader and 10.5% from other producers. The remaining

21.2% of producers also stated the seeds they obtained from companies selling registered varieties as seeds (Figure 9). Most of the producers in the survey area (89.2%) use seeds whose quality is not fully known and which have begun to lose their certified characteristics. Serious yield losses occur because they cannot show resistance to various biotic and abiotic stress factors.

Karabak and Cevher (2002) stated that 43.2% of the seeds used by the producers in the working areas were supplied from their own enterprises, 13.4% from the neighbours and 11.0% from the provincial and district directorates of agriculture. The producers in Seydişehir obtain the seeds from private companies, cooperatives and other farmers (Oztürk, 2019).

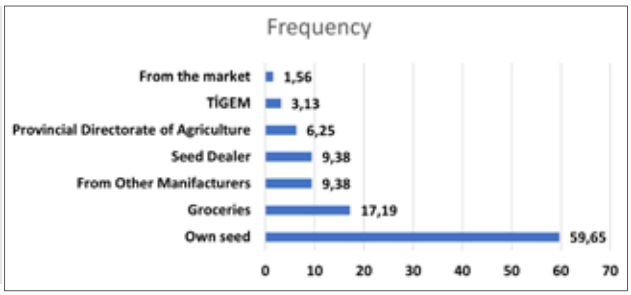

Figure 9. Frequency values of the places where chickpea producing farms supply seeds.

Situation of Soil Analysis of Farms Producing Chickpea

Most of the farms producing chickpea in the region (91.0%) do not have soil analysis before production. However, businesses still use various chemical fertilizers while growing chickpeas. Fertilization without such technical knowledge and findings causes significant environmental and economic damage. Considering that the active ingredients of chemical fertilizers, such as groundwater and soil pollution, are imported, the economic cost of misuse and misuse will also emerge as an important problem. Düzdemir et al. (2008), in their study in the Tokat region, determined that most of the producers did not have soil and leaf analyses done because they did not consider it important or because they did not trust the results. However, it is very important to determine the level of fertilizer use in agricultural production, the factors affecting it and its efficiency (Karkacıer et al., 1999). Oztürk (2019) stated that in order to increase the declining yield in the Seydisehir region, the farmers should improve themselves in plant nutrition and provide sufficient micronutrients by having an analysis on the unproductive soils.

Types of Fertilizers Used by the Farms in Chickpea Cultivation

The types of fertilizers used by the farms in chickpea production are given in Figure 10. According to this graph, producers mostly preferred chemical fertilizers. 45.5% of the producers used DAP (Diammonium Phosphate), 18.2% CAN (Calcium Ammonium Nitrate) and 15.3% compound fertilizer 20-20-Zn. DAP is the fertilizer that meets the nitrogen and phosphorus needs of chickpeas in the best combination in terms of quantity. This may have played an important role in their preference.

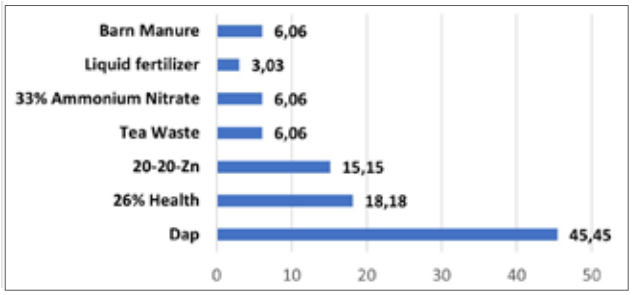

Figure 10. Frequency values of fertilizer forms used in farms.

Farmers think that using fertilizers in agricultural production generally has positive effects (Esengün et al., 1995). However, it is also very important to have sufficient technical knowledge in the use of fertilizers. Düzdemir et al. (2008), in their study with chickpea producers in the Tokat region, determined that approximately 60% of the farmers used fertilizer (incomplete or excessive amount) to grow chickpeas, and they mostly decided on the amount and type of fertilizer, taking into account the economic conditions. In the survey study conducted in 4 provinces in Central Anatolia (Ankara, Yozgat, Çorum, and Konya), it was determined that 20% of the chickpea producing farms use base fertilizer and 8.8% use top fertilizer. That was determined that producers generally prefer Diammonium phosphate (DAP, 10-20 kg/da) as base fertilizer and Ammonium Nitrate (5-13 kg/da), and Urea (10-25 kg/da) as uppermost fertilizer. In the research, it was determined that the use of fertilizer in chickpeas and lentils is less than other products. The reasons for this were explained as high fertilizer prices (61%), lack of knowledge of the producers about the cultivation technique (18%) and the lack of the habit of using fertilizers (8%).

Chickpea Harvest Times in Farms

As can be seen from Figure 11, 82% of the farms are harvested between the end of August and the beginning of September. Chickpea is a long day plant. It is planted as a summer cottage in almost all regions of Türkiye to avoid disease and weed damage (Sepetoglu, 1994). However, in this case, drought and high temperatures, especially during flowering, cause yield losses as well as variability in harvest times. Chickpeas are harvested between July and September

in Ankara, Çorum, and Yozgat provinces and between June and August in Konya (Karabak and Cevher, 2002).

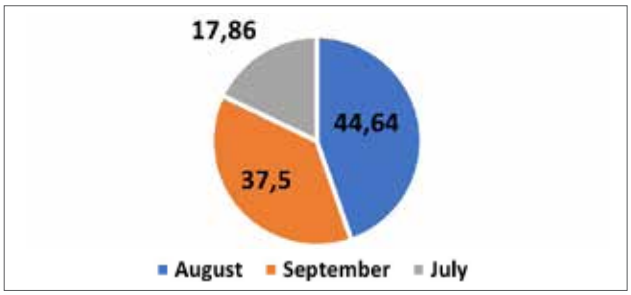

Figure 11. Frequency of harvest periods on farms.

Harvesting Method of Chickpeas on Farms

A total 93% of the farms harvest by hand and thresh the threshing process (Figure 12). Today, when migration from the village to the city is intense, the lack of sufficient workforce threatens the chickpea agriculture seriously. This problem occurs during the harvest and threshing period. Although manual harvesting is a process that requires sufficient labour and intensive labour, the lack of sufficient labour is becoming an important problem day by day and may affect the producer's view of chickpea agriculture.

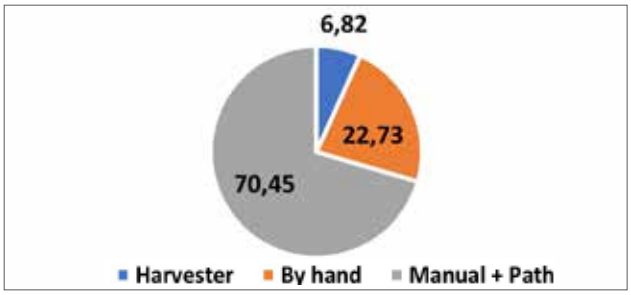

Figure 12. Frequency values of chickpea harvest patterns in farms.

Karabak and Cevher (2002); They reported that in Central Anatolian conditions, chickpeas were mostly harvested by hand and blended with batter. In Güler (2011); He said that in Erzurum conditions, chickpeas are generally harvested by plucking by hand and then threshed with a mulcher machine. The researcher emphasizes that the use of combine harvesters in the chickpea harvest is increasing day by day in Erzurum conditions. Yılmaz and Yıldırım (2016); They stated that the most harvested products by combine harvester in Central Anatolian conditions were barley and wheat, followed by maize, oats and chickpeas. They stated that the reason for the limited use of combine harvesters in chickpea harvest is the low cultivation area of chickpeas.

When the harvest and threshing methods of chickpeas are examined in the enterprises included in our research, it will be clearly seen that they are similar to the literature reports. In the majority of enterprises, chickpeas are plucked by hand and blended with batter. However, minimizing grain losses, especially at harvest, is a very important issue in grain products such as chickpeas. In this, the use of certified, improved seeds should be expanded in all chickpea cultivation areas, especially in the research region, with an upright structure adapted to local conditions, resistant to diseases and pests, suitable for machine harvesting. In addition, machine settings should be paid attention to in harvesting operations with a combine (Güler, 2011).

Problems Limiting Chickpea Cultivation

In the survey study, chickpea growers were asked to list the main problems they encountered in chickpea farming. Producers listed the three most important problems limiting chickpea agriculture in the region as disease (Chickpea blight) (45.2%), vertebrate (Pig) damage (21.5%) and marketing (8.6%), respectively (Figure 13). Again, factors such as weed invasion, drought and high temperature may come to the fore from time to time.

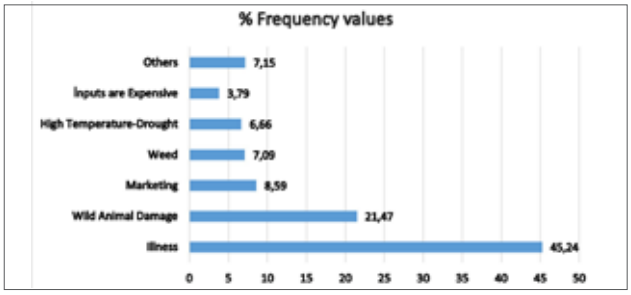

Figure 13. Problems limiting chickpea cultivation and frequency values.

It was stated that the cultivation areas, production amount and export of chickpea, red lentil and dry bean products could be decrease, consumption amount, import and producer prices could be increase in Türkiye. In the study, it is stated that the balance in the supply-demand balance will shift to the supply side, this shift will result from the increase in imports, not from the increase in production, and that foreign dependency in legumes will increase (Bolat et al., 2017).

It was understood that the most important problems of chickpea producers in Central Anatolian conditions are low product prices and instability. It is seen that economic problems were also on the basis of the social factors that limit production. In addition, anthracnose disease appeared as a limiting factor in chickpeas (Karabak and Cevher, 2002). Öztürk (2019) determined that among the problems of the farmers producing chickpeas, there are some problems arising from the lack of market alternatives, market uncertainty, financing difficulties and production problems. In the study commissioned by the Credit Registration Bureau (2019), on the problems encountered in

plant production in general; the problems faced by farmers during production are respectively "input cost" (83%), "fighting diseases/pests" (36%), worker problems (33%), "irrigation" (2%-7%) and "climatic problems" (2%) are listed. It was determined that the most important problem of the farmers after the production, namely in the marketing phase, is the low selling price (78%). In addition, it was stated that in order to produce a quality bean in Konya conditions, it was stated that the deficiencies determined in the knowledge level of the farmers in terms of cultivation techniques should be eliminated (Önder et al., 2012). There is a great similarity between our findings and the literature.

Conclusions

The results of the survey to determine the problems encountered in chickpea production in the provinces of Samsun, Amasya, and Tokat located in the Central Black Sea Region and to determine some characteristics of the agricultural enterprises producing chickpea can be briefly summarized as follows.

- In the examination of the basic human resources characteristics of the enterprises; the number of individuals in the enterprises varied between 5-18 people, and it was determined that they mostly consisted of 5-6 (38.0%) people. In the enterprise, 75% of the household heads and 82% of the head spouses are secondary school graduates. In the enterprises, 93% of the household heads carry out farming based on only herbal production as a profession, and 62% of the spouses carry out farming and animal husbandry together. A total 12.9% of children contribute only by farming.

- The majority of the farms (63%) in the survey area have 10 ha or less of operating land. The farms included chickpeas in single, double and triple rotations in their crop rotation systems. During the period of the study, most of the wheat was grown in the farms. It was followed by chickpea, vetch, barley, and sunflower. According to the cultivation areas, wheat took the first place, followed by sunflower, vetch and barley. In the order of total cultivation area of chickpea, it is in the fifth place since large landowners prefer sunflower, vetch and barley in alternation with wheat.

- A total 35.2% of the producers preferred Spanish grain type chickpeas as seeds. Producers have used population Spanish, Native, Red, and Native Yellow Chickpeas as well as Cagatay, Damla-89, Gökçe, and Yaşa 05 registered cultivars as seeds. While 59. 7% of the enterprises obtained their seeds from the previous product, 19.0% from grain and 10.53% from other producers, 21.1% of them bought their seeds from companies selling registered varieties.

- Most of the chickpea producers in the region (91.0%) do not have soil analysis before production. However, farms used DAP (Diammonium Phosphate), (18.18%) CAN (Calcium Ammonium Nitrate) and (15.2%) compound fertilizer 20-20-Zn in chickpea production (45.5%).

- A total 82% of the farms in the survey area harvest chickpeas between the end of August and the beginning of September, 93% of the farms harvested by hand and performed the threshing in the form of forging.

- It has been seen that the main problems limiting chickpea farming in the farms in the survey area are disease (blight disease) (45.2%), vertebrate (Pig) damage (21.5%) and marketing (8.6%). These were followed by other problems such as weed invasion, drought and high temperature.

To put it in conclusion; when the agricultural potential of the region and its plant production capacity and structure are taken into account, it will be seen that chickpea will maintain its place in the future and be an economically profitable agricultural product for the producer. However, for this, some improvements should be made in some areas and the way to a more efficient chickpea production should be opened. In this context; first of all, increasing the education level of chickpea producers, informing the producers about the chemical pesticides (herbicides, insecticides, fungicides, etc.), artificial fertilizers used during cultivation, the selection and use of seeds, and the producers being open to innovations in order to increase the yield that decreases as they prefer traditional cultivation methods. need to be educated and informed about If this is done, a sustainable and high yielding chickpea production will be possible in the region for many years. In addition, it is recommended to give importance to the development of varieties compatible with the region, to solve the problems encountered in the marketing of chickpeas from both the producer and the consumer point of view, and to increase the prefer ability of chickpea production compared to alternative products by providing low-cost production.

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Table 1. Survey areas and the number of surveyed enterprises.

Survey areas	Number of surveyed enterprises
Tokat	
Artova	9
Zile	14
Niksar	11
Total	34
Amasya	
Central District	9
Goynücek	11
Merzifon	6
Total	26
Samsun	
Asarcık	3
Ladik	3
Havza	3
Vezirkoprü	3
Total	12
Total Of Locatıons	72

Table 2. Survey questions asked to chickpea producers in the study.

1.	Number of individuals in the business
2.	Education levels of producers
3.	Occupational status of individuals in the enterprise
4.	Agricultural land existence of enterprises
5.	Crop rotation planning in enterprise
6.	The most preferred pre-plant in chickpea agriculture
7.	Total planting areas according to plant types in farms
8.	Seed variety used by chickpea producing farms
9.	Seed supply places of farms
10.	Soil analysis status of chickpea production farms
11.	Types of fertilizers used by farms in chickpea cultivation
12.	Chickpea harvest times on farms
13.	Harvesting of chickpeas on farms
14.	Problems limiting chickpea farming

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