



Hydropolitics Association
Applied Research Center

2017

Demographic Changes in Turkey's Farmers



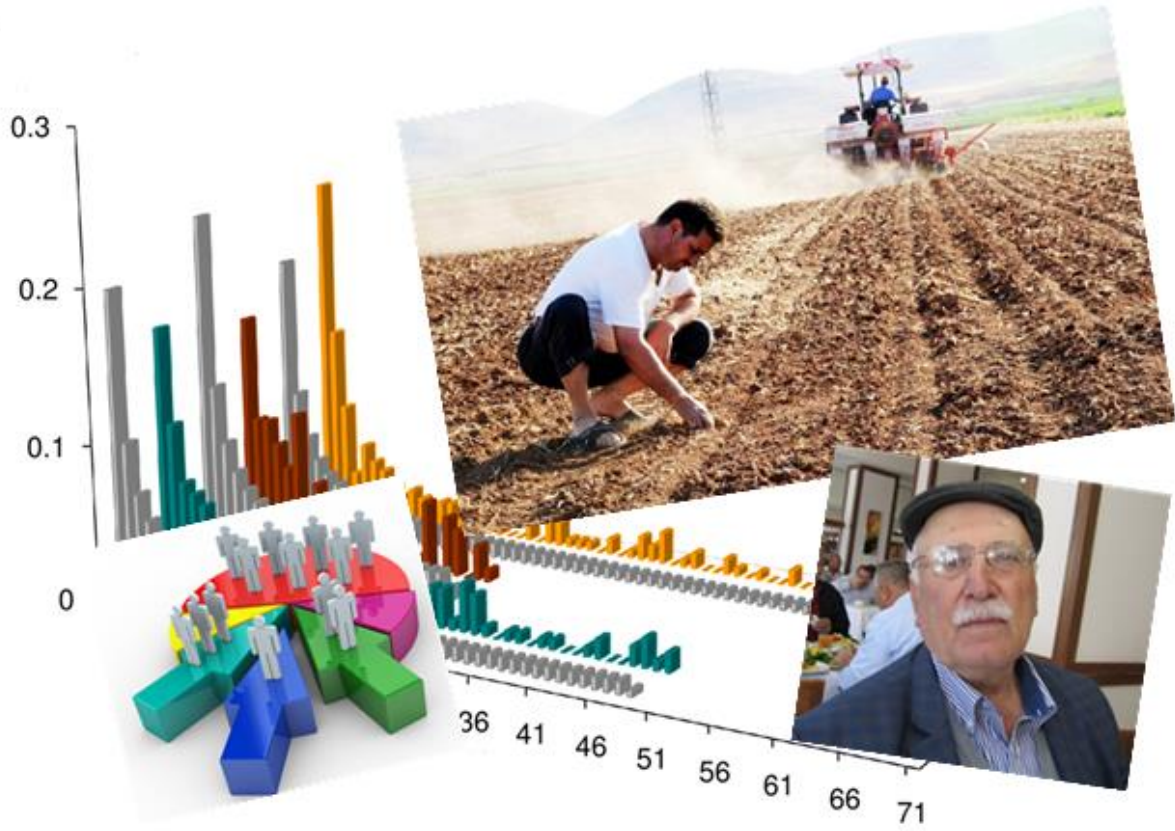
**THE PROJECT ON DEMOGRAPHIC AND
STRUCTURAL CHANGES IN TURKEY'S
AGRICULTURE**

HPA-TÜSKOOP-BİR-YTÜ

Hydropolitics Association

Applied Research Center

April 2017



Edited by

Dursun YILDIZ

**PRELIMINARY
REPORT**

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Preliminary Report: Demographic Changes in Turkey's Farmers

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Contents	Page
About the Preliminary Report	5
SECTION I	
1.Role of Agriculture in the Economic Development of a Country.....	8
1.1. Role of Agriculture in Economic Development.....	8
SECTION II	
2.Agriculture in Turkey	13
2.1. Turkey’s Agriculture Sector Recently in Figures.....	14
2.2. Distribution of Agricultural Land.....	16
2.3. Labor Force in Agriculture.....	17
2.4. Agricultural Sector in the Tenth Development Plan 2014-2018.....	20
SECTION III	
3. Groundwater Irrigation Cooperatives	23
SECTION IV	
4.Some Results of the Survey.....	25
4.1. Profile of the survey respondents.....	25
4.2. Key Findings of the survey conducted by Hydro politics Association and TUSKOOB-BİR	26
4.2.1. Distribution of Agricultural Production	26
4.2.2. Income of the Farmers in Agricultural Sector.....	29
4.2.3. Selling and buying agricultural land.....	31
4.2.4. Farmers Membership to water user associations, cooperatives etc.....	32
4.2.5. Agricultural governmental subsidy.....	32
4.2.6. Participation to education and training programs.....	33
4.2.7. Farmers migration tendency to the cities.....	34
4.2.8. Lower prices of agricultural production and farmers influence on setting prices	38

4.2.9. Other practical problems related with agricultural sector in Turkey.....39

SECTION V

5.Conclusions40

REFERENCES..... 41



About the Preliminary Report

We as Hydro politics Association are continuing to study on climate change impacts on water security and food security. We prepared a preliminary report in relation with the project titled **“Awareness and Adaptation Study to Climate Change in Agricultural Sector.”**

The number of people living in cities has risen by a factor of almost 3 since 1950, from 20 million to about 60 million. Urbanization is the most visible manifestation of settlement dynamics. This phenomenon is no longer only fed by rural migrations; the number of people born in cities has exceeded the number of people arriving from rural areas.

Younger generation born in rural area clearly prefer to live in cities and leave from agricultural production.

As urbanization has advanced, a growing proportion of farmers have had to produce surplus to meet the demand from increasing numbers of non-producing consumers

This new situation needs to be seen in the context of demographic challenge and its inherent structural changes, with proportionally less and less producers per consumer.

Preferring to live in cities and the market opportunities created by urbanization are the main driving forces behind these changes in the rural economy. Accompanying these dynamics is crucial for current and future food challenges. This is a major factor endangering the future of village life in Turkey. Therefore, Turkish Government decided to support young farmers to bring back to their own village.

The first Return to Village Project has started in 2005. Turkish Government has also decided to grant up to TL 30 000 to be provided to young farmers on a project basis on March 2016. All these projects show that Turkish Government is aware of the problems and try to take necessary measures.

In this context we decided to investigate the situation together with Turkish Irrigation Cooperatives on the base of a project called “Demographic and Structural Changes in Turkish Agricultural Workforce “

At the first stage of the project, a face to face survey has been completed in the symposium hold by Central Union of the Irrigation Cooperatives of Turkey in 04-08 December 2016. Applied Research Center of the Hydropolitics Association is responsible for the Project.

This preliminary report includes first results from the survey. Detailed evaluation of the results are carried out in the Applied Research Center of HPA.

Sincerely

Dursun Yıldız

President

19 April 2017-ANKARA-Turkey



The Symposium held by Groundwater Irrigation Cooperatives in 04-08 December 2016



Face to face surveying in the Symposium



TÜRKİYE TARIMININ DEMOGRAFİK VE YAPISAL DÖNÜŞÜMÜ VE STRATEJİK ÖNEMİ

DEĞERLENDİRME FORMU

ANKET NO: 2	TARİH: 04-08 Aralık 2016
<p>TÜSKOOP-BİR SU POLİTİKALARI DERNEĞİ HİDROPOLİTİK AKADEMİ VE YILDIZ TEKNİK ÜNİVERSİTESİ İSTATİSTİK BÖLÜMÜ tarafından "Türkiye'deki Tarımsal İşgücünün Demografik ve Yapısal Dönüşüm Projesi " başlıklı bir araştırma gerçekleştirilmektedir. Bu çalışma tarım sektörünün gelişimi ve geleceği açısından önem taşımaktadır. Yardımlarınız için şimdiden teşekkür ederiz.</p>	

BÖLÜM 1: KİŞİSEL BİLGİLER

S1. Yaşınız	K1
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S2. Eğitim düzeyiniz?	K2	S3. Medeni Durumunuz?	K3
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Survey Form



Farmers are filling the survey form



Farmers are filling the survey form



SECTION I

1.Role of Agriculture in the Economic Development of a Country (17)

Some of the key role of agriculture in economic development of a country are as follows:

Agricultural sector plays a strategic role in the process of economic development of a country.

It has already made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of less developed countries is of vital importance. In other words, where per capita real income is low, emphasis is being laid on agriculture and other primary industries.

“Increase in agricultural production and the rise in the per-capita income of the rural community, together with the industrialization and urbanization, lead to an increased demand in industrial production”-Dr. Bright Singh.

The history of England is clear evidence that Agricultural Revolution preceded the Industrial Revolution there. In U.S.A. and Japan, also agricultural development has helped in the process of their industrialization. Similarly, various under-developed countries of the world engaged in the process of economic development have by now learnt the limitations of putting over-emphasis on industrialization to attain higher per capita real income. “Thus, industrial and agricultural developments are not alternatives but are complementary and are mutually supporting with respect to both inputs and outputs.”

It is seen that increased agricultural output and productivity tend to contribute substantially to an overall economic development of the country, it will be rational and appropriate to place greater emphasis on further development of the agricultural sector.

According to Prof. Kinderberger, Todaro, Lewis and Nurkse etc., agriculture makes its contribution to economic development in several ways,

(1) By providing food and raw material to non-agricultural sectors of the economy,

(2) By creating demand for goods produced in non-agricultural sectors, by the rural people on the strength of the purchasing power, earned by them on selling the marketable surplus,

(3) By providing investable surplus in the form of savings and taxes to be invested in non-agricultural sector,

(4) By earning valuable foreign exchange through the export of agricultural products,

(5) Providing employment to a vast army of uneducated, backward and unskilled labor. As a matter of fact, if the process of economic development is to be initiated and made self-sustaining, it must begin for agricultural sector.

1.1. Role of Agriculture in Economic Development (17)

The agriculture sector is the backbone of an economy which provides the basic ingredients to mankind and now raw material for industrialization. Therefore, the role of agriculture for the development of an economy may be stated as below:

1. Contribution to National Income:

The lessons drawn from the economic history of many advanced countries tell us that agricultural prosperity contributed considerably in fostering economic advancement. It is correctly observed that, "The leading industrialized countries of today were once predominantly agricultural while the developing economies still have the dominance of agriculture and it largely contributes to the national income. In India, still 28% of national income comes from this sector.

2. Source of Food Supply:

Agriculture is the basic source of food supply of all the countries of the world—whether underdeveloped, developing or even developed. Due to heavy pressure of population in underdeveloped and developing countries and its rapid increase, the demand for food is increasing at a fast rate. If agriculture fails to meet the rising demand of food products, it is found to affect adversely the growth rate of the economy. Raising supply of food by agricultural sector has, therefore, significant importance for economic growth of a country.

3. Pre-Requisite for Raw Material:

Agricultural advancement is necessary for improving the supply of raw materials for the agro-based industries especially in developing countries. The shortage of agricultural goods has its impact upon on industrial production and a consequent increase in the general price level. It will impede the growth of the country's economy. The flour mills, rice shellers, oil & dal mills, bread, meat, milk products sugar factories, wineries, jute mills, textile mills and numerous other industries are based on agricultural products.

4. Provision of Surplus:

The progress in agricultural sector provides surplus for increasing the exports of agricultural products. In the earlier stages of development, an increase in the exports earning is more desirable because of the greater strains on the foreign exchange situation needed for the financing of imports of basic and essential capital goods.

Johnson and Mellor are of the opinion, "In view of the urgent need for enlarged foreign exchange earnings and the lack of alternative opportunities, substantial expansion of agricultural export production is frequently a rational policy even though the world supply—demand situation for a commodity is unfavorable."

5. Shift of Manpower:

Initially, agriculture absorbs a large quantity of labor force. In India, still about 62% labor is absorbed in this sector. Agricultural progress permits the shift of manpower from agricultural to non-agricultural sector. In the initial stages, the diversion of labor from agricultural to non-agricultural sector is more important from the point of view of economic development as it eases the burden of surplus labor force over the limited land. Thus, the release of surplus manpower from the agricultural sector is necessary for the progress of agricultural sector and for expanding the non-agricultural sector.

6. Creation of Infrastructure:

The development of agriculture requires roads, market yards, storage, transportation railways, postal services and many others for an infrastructure creating demand for industrial products and the development of commercial sector.

7. Relief from Shortage of Capital:

The development of agricultural sector has minimized the burden of several developed countries who were facing the shortage of foreign capital. If foreign capital is available with the 'strings' attached to it, it will create another significant problem. Agriculture sector requires less capital for its development thus it minimizes growth problem of foreign capital.

8. Helpful to Reduce Inequality:

In a country which is predominantly agricultural and overpopulated, there is greater inequality of income between the rural and urban areas of the country. To reduce this inequality of income, it is necessary to accord higher priority to agriculture. The prosperity of agriculture would raise the income of the majority of the rural population and thus the disparity in income may be reduced to a certain extent.

9. Based on Democratic Notions:

If the agricultural sector does not grow at a faster rate, it may result in the growing discontentment amongst the masses which is never healthy for the smooth running of democratic governments. For economic development, it is necessary to minimize political as well as social tensions. In case the majority of the people have to be kindled with the hopes of prosperity, this can be attained with the help of agricultural progress. Thus, development of agriculture sector is also relevant on political and social grounds.

10. Create Effective Demand:

The development of agricultural sector would tend to increase the purchasing power of agriculturists which will help the growth of the non-agricultural sector of the country. It will provide a market for increased production. In underdeveloped countries, it is well known that the majority of people depend upon agriculture and it is they who must be able to afford to consume the goods produced.

Therefore, it will be helpful in stimulating the growth of the non-agricultural sector. Similarly, improvement in the productivity of cash crops may pave the way for the promotion of exchange economy which may help the growth of non-agricultural sector. Purchase of industrial products such as pesticides, farm machinery etc. also provide boost to industrial dead out.

11. Helpful in Phasing out Economic Depression:

During depression, industrial production can be stopped or reduced but agricultural production continues as it produces basic necessities of life. Thus, it continues to create effective demand even during adverse conditions of the economy.

12. Source of Foreign Exchange for the Country:

Most of the developing countries of the world are exporters of primary products. These products contribute 60 to 70 per cent of their total export earning. Thus, the capacity to import capital goods and machinery for industrial development depends crucially on the export earning of the agriculture sector. If exports of agricultural goods fail to increase at a sufficiently high rate, these countries are forced to incur heavy deficit in the balance of payments resulting in a serious foreign exchange problem.

However, primary goods face declining prices in international market and the prospects of increasing export earnings through them are limited. Due to this, large developing countries like India (having potentialities of industrial development) are trying to diversify their production structure and promote the exports of manufactured goods even though this requires the adoption of protective measures in the initial period of planning.

13. Contribution to Capital Formation:

Underdeveloped and developing countries need huge amount of capital for its economic development. In the initial stages of economic development, it is agriculture that constitutes a significant source of capital formation.

Agriculture sector provides funds for capital formation in many ways as:

(i) agricultural taxation,

(ii) export of agricultural products,

(iii) collection of agricultural products at low prices by the government and selling it at higher prices. This method is adopted by Russia and China,

(iv) labor in disguised unemployment, largely confined to agriculture, is viewed as a source of investible surplus,

(v) transfer of labor and capital from farm to non-farm activities etc.

14. Employment Opportunities for Rural People:

Agriculture provides employment opportunities for rural people on a large scale in underdeveloped and developing countries. It is an important source of livelihood. Generally, landless workers and marginal farmers are engaged in non-agricultural jobs like handicrafts, furniture, textiles, leather, metal work, processing industries, and in other service sectors. These rural units fulfill merely local demands. In India about 70.6% of total labor force depends upon agriculture.

15. Improving Rural Welfare:

It is time that rural economy depends on agriculture and allied occupations in an underdeveloped country. The rising agricultural surplus caused by increasing agricultural production and productivity tends to improve social welfare, particularly in rural areas. The living standard of rural masses rises and they start consuming nutritious diet including eggs, milk, ghee and fruits. They lead a comfortable life having all modern amenities—a better house, motor-cycle, radio, television and use of better clothes.

16. Extension of Market for Industrial Output:

As a result of agricultural progress, there will be extension of market for industrial products. Increase in agricultural productivity leads to increase in the income of rural population which in turn leads to more demand for industrial products, thus development of industrial sector.

According to Dr. Bright Singh, “Increase in agricultural production and the rise in the per-capita income of the rural community, together with the industrialization and urbanization, lead to an increased demand in industrial production.” In this way, agricultural sector helps promote economic growth by securing as a supplement to industrial sector.

From the above cited explanation, we conclude that agricultural development is a must for the economic development of a country. Even developed countries lay emphasis on agricultural development. According to Muir, “Agricultural progress is essential to provide food for growing non-agricultural labor force, raw materials for industrial production and saving and tax revenue to support development of the rest of the economy, to earn foreign exchange and to provide a growing market for domestic manufactures.”





SECTION II

2.AGRICULTURE IN TURKEY

Agriculture is still the occupation of the majority of Turkish people, despite the share of industry and services are raising constantly. Turkey is one of the few self-sufficient countries in the world in terms of food. Turkey's fertile soil, adequate climate, and abundant rainfall permit growing almost any kinds of crops. The farming is conducted in all of the regions in Turkey, but it's less practiced in the mountainous eastern regions where the main activity is based on animal husbandry which has a share of one-fourth of the gross value of the total agricultural production.

In terms of agricultural lands, Turkey is also one of the largest countries in the world. About 35.5% of the country are arable lands and 15% consists of forests. The cultivated land is around 24 million hectares as per 2015. Around 18.4% of the cultivated land is irrigated. Vegetable products account for 76% of total agricultural production, then animal husbandary, meanwhile forestry and fishing contribute a minimal amount. Fruits and field crops make up the most of vegetable products, wheat being the leading crop. As per the figures of 2015, Turkey is the world's biggest producer of hazelnuts, figs, apricots and raisins, the 4th biggest producer of fresh vegetables and grapes, the 6th biggest producer of tobacco, the 8th biggest producer of wheat, and the 10th biggest producer of cotton. Tea is also large produced and exported.

The rapid industrialization of Turkey after 1930's and government policies caused agriculture's share to decline in overall income. The share of the agricultural sector in the GNP was almost 50% in 1950, 25% in 1980, 15.3% in 1990, 11% in 2005, 7.4% in 2014. This caused the fall of economic standards of the farmers and contributed to emigration from rural to urban areas. But in 1990's, the State encouraged the farmers to adopt modern techniques with the mechanization and has provided infrastructural conveniences for irrigation and cultivation

contributing to the development of the agricultural sector. The most important of these projects is the Southeast Anatolia Project (GAP).

Despite agriculture's relative decline in the last 30 years, the sector still plays an important role in foreign trade. Turkey exports many agricultural products such as cereals, pulses, industrial crops, sugar, nuts, fresh and dried fruits, vegetables, olive oil, and livestock products. The main export markets are the European Union, the United States, and the Middle East. Around 21.5% of total employment in Turkey in 2014 was in agriculture sector, and total exports of agricultural products passes 17 billion USD (as of 2013).

The agricultural sector is currently undergoing a restructuring process in order to achieve harmonization with the EU regulations. Turkish farmers enrolled in the Farmer Registry System receive Direct Income Supports from the government, a premium system is practiced, and they receive chemical fertilizer support and diesel fuel support, as well as training for the latest agricultural techniques. The Agricultural Bank of Turkey (Ziraat Bankasi) provides most loans to farmers and cooperatives, much of the World Bank's lending for agricultural projects in Turkey is channeled through this bank.

Turkey prides itself in being one of a few countries in the world that are self-sufficient when it comes to providing food for its 82 million people.

With a favourable climate and a prosperous agriculture sector Turkey is currently trying to harmonize its farming practices with European Union standards in preparation for its ascent into the EU. A quarter of the population of Turkey are employed in agriculture and the sector, which is heavily supported by the Turkish government, exported over US\$17 billion of produce last year.

In terms of agricultural land, Turkey is also one of the largest countries in the world. About 35.5% of the country is used for arable production and 15% is forest. Some 24 million hectares of land was cultivated in 2015 with 18% of it requiring irrigation

According to the Government Action Plan of 2016 financial support of up to TL 30,000 will be granted to younger farmers for projects they submit. Also, programs for extending rural development incentives to 81 cities are in progress

2.1.Turkey's Agriculture Sector Recently In Figures

When food security is the main concern on a global scale even at this very hour and for the coming decades; Turkey, blessed with vast fertile lands and a climate suitable for growing a wide array of agricultural products, is a country that is able to feed its population of 76 million, along with the 35 million tourists who visit Turkey annually. In fact, Turkey is ranked as 1st in Europe and 7th in the world in agricultural production.

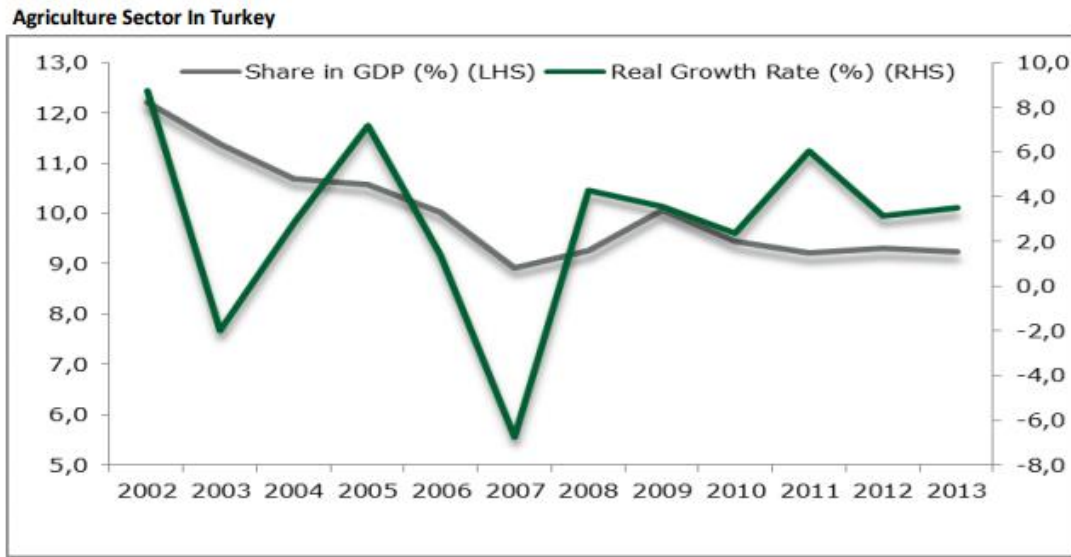
Turkey has a large and growing food and agriculture industry that corresponds to 9% of the overall gross value-added (GVA) and absorbs 25% of the employment in the country which account for some 5.4 million people. The recent GDP data reflects that the share of agricultural sector in total production only spikes during crisis times, and has been falling steadily from around 20% back in the 1980's to 8-9% in the past few years.

Rapid growth rates of the service sector (starting with the tourism sector) which employ more than 13 million people and rapid increase in price defectors in recent years have been limiting the share of agriculture in total production.

Even though the declining share of agriculture in total GDP is often encountered during the development of the countries in the long term, it would not be incorrect to note that the slow

growth of the agricultural production in real terms constitutes a problem for the agricultural sector itself on the back of productivity related problems.

The gross value of Turkey’s agricultural production reached \$62 billion in 2013 according to figures from the Ministry of Food, Agriculture and Livestock. The strengths of the industry include the size of the market in relation to the country’s young population, a dynamic private sector economy, substantial tourism income and a favorable climate. GDP per capita is at \$10,945 as of 2013. A permanent worker in the agricultural sector in 2013 generated TL1,232 (\$650) and TL884 (\$590) in 2010 per month, while the same figure is three times higher for the industry sector.(Figure 1).



Source: Turkstat

Figure 1. Agriculture Sector in Turkey

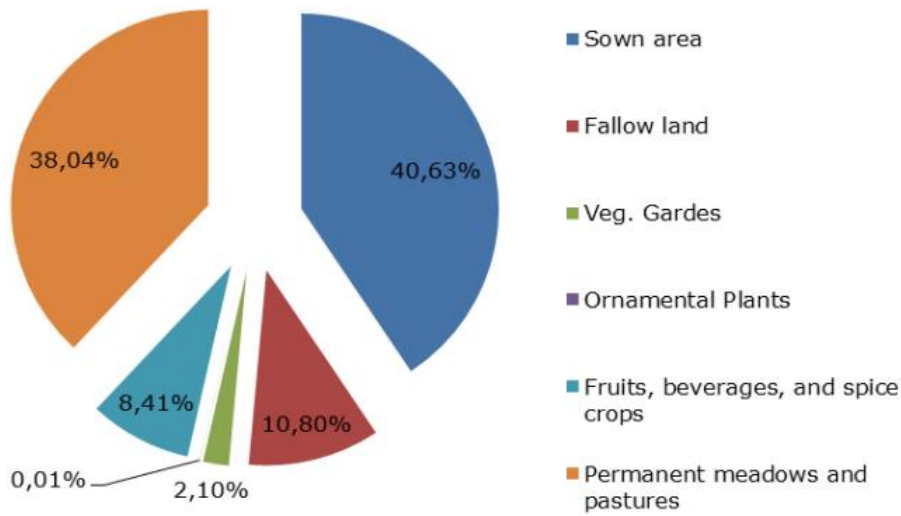
Even though Turkey is a rich country in respect of agricultural areas, the division of the majority of the lands into small parcels in terms of property ownership makes it difficult to benefit from the economies of scale particularly in perennial crops and livestock. Turkey’s total agricultural land is 38 million hectares as of 2013. The total cultivated agricultural land (including long life crops such as fruit trees) is 23,8 million hectares.

The share of the cultivated lands in the total agricultural lands was about 70% in 1990s as this rate decreased down to 63% in 2013. The land used for agricultural purposes has been on a slow declining trend given the migration from rural areas to the urban centers which has gained pace during the last decade thanks to the country’s rapid growth rate, magnified by the negative effects of drought, erosion and other adverse climatic conditions.

According to the 2011 census, there are approximately 3 million agricultural holdings in Turkey, most of which are family farms employing family labor. Holdings roughly average to 6 ha which are smaller than EU28 average of 13 ha.

2.2.Distribution of Agricultural Land

2013 total utilized agricultural land of 38mn hectares



Source: Turkstat

Figure 2. Total utilized agricultural land in Turkey (2013)

More than 1,600 varieties of Turkish agricultural products reach 180 countries worldwide. Around 40% of the country's total land area consists of arable land, growing a wide range of products such as grains, pulses, oil seeds, fruits and vegetables, flowers, poultry, milk and dairy products, honey and tobacco.(Figure 2).

For a number of years the agricultural sector has been undergoing a modernization process, with irrigation schemes supporting improvements in the productivity of agricultural land.

Table 1. Labor Force Statistics, December 2016 (Source : turkstat)

Non-seasonally adjusted main labour force indicators, December 2015, December 2016

	Total		Male		Female	
	2015	2016	2015	2016	2015	2016
(Thousand)						
Population 15 years old and over						
Population	58 294	59 146	28 790	29 240	29 505	29 905
Labour force	29 652	30 540	20 444	20 921	9 208	9 619
Employed	26 448	26 669	18 427	18 561	8 021	8 108
Agriculture	5 003	4 915	2 795	2 781	2 207	2 134
Non-agriculture	21 446	21 753	15 632	15 780	5 814	5 974
Unemployed	3 204	3 872	2 017	2 360	1 187	1 511
Not in the labour force	28 642	28 606	8 346	8 319	20 296	20 286
(%)						
Labour force participation rate	50.9	51.6	71.0	71.5	31.2	32.2
Employment rate	45.4	45.1	64.0	63.5	27.2	27.1
Unemployment rate	10.8	12.7	9.9	11.3	12.9	15.7
Non-agricultural unemployment rate	12.7	14.9	11.1	12.7	16.8	20.1
15-64 age group						
Labour force participation rate	55.7	56.6	76.4	77.1	34.8	36.0
Employment rate	49.5	49.3	68.8	68.3	30.2	30.2
Unemployment rate	11.0	12.9	10.1	11.5	13.2	16.0
Non-agricultural unemployment rate	12.8	14.9	11.1	12.7	16.9	20.2
Youth population (15-24 age)						
Unemployment rate	19.2	24.0	18.3	21.3	20.7	28.8
The rate of neither in employment nor in education ⁽¹⁾	23.5	24.8	14.3	15.4	32.7	34.4

Figures in table may not add up to totals due to rounding.

(1) The rate of young people neither in employment nor in education in total youth population.

2.3.Labor Force in Agriculture

Share of agricultural sector, which constitutes approximately 25 % of the Turkey's employment, in nominal Gross Domestic Products being around 7,5 % in 2016, remains quite lower than the employment rate. Rapid growth rates of the service sector and rapid increase in price defectors in recent years have become important development limiting the share of agriculture in total production.

Table 2. Number of registered farmers in Turkey

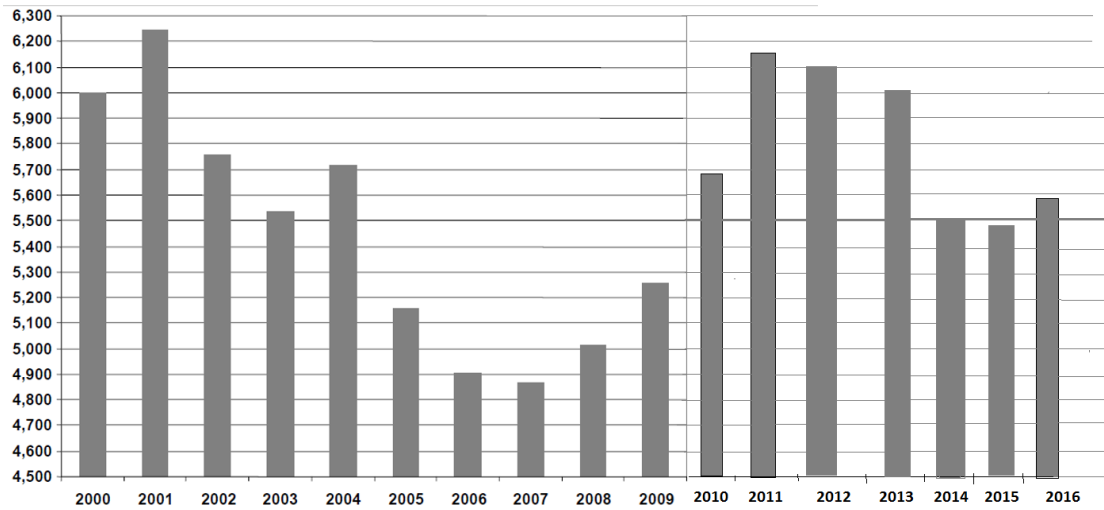
Years	Number of farmers	Area (ha)
2001	2.182.767	121.964.486
2002	2.588.666	164.960.378
2003	2.765.287	167.346.718
2004	2.745.424	167.099.180
2005	2.679.737	165.826.141
2006	2.609.723	164.930.261
2007	2.613.234	167.277.814
2008	2.380.284	157.694.645
2009	2.328.731	154.360.407
2010	2.318.506	156.309.390
2011	2.292.380	152.048.523
2012	2.214.537	153.449.052
2013	2.183.270	147.293.244
2014	2.206.874	149.276.892

Source: Ministry of Food, Agriculture and Livestock, 2015

One of four people working in Turkey are employed in the agriculture sector .83,8% of them are unregistered.In the agricultural sector almost all of the female population employers are unregistered.In 2009 ,the percentage of unregistered female employer are unregistered.in 2009 ,the percentage of unregistered female employer was 96%.(FAO 2011).

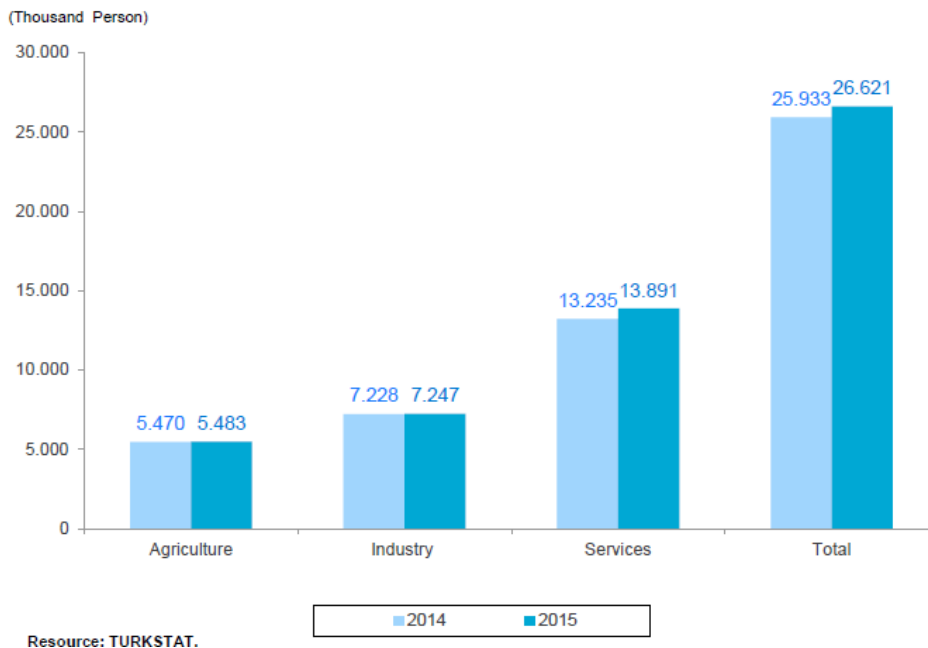
Agricultural workers in Turkey are divided into two groups according to their working time, permanent and temporary agricultural workers .Permanent agricultural workers are workers who have been in management for at least one production period while working seasonally (temporary) agricultural workers for a certain period during the year.These workers are called day laborers ,monthly workers or seasonal workers ,according to the duration of work.

Number of registred farmers in agriculture by years is given in Figure 2. This figure shows a slightly declining trend in agricultural workforce.



Sources : Turkish Statistics Institute

Figure 3. Number of persons employed in agriculture (thousand; combined data)



Resource: TURKSTAT.

Figure 4. Sectoral Distribution of Employees (21)

Number of persons employed in agriculture has been about 5,5 million since last three years(Figure 3). As shown in Figure 3, Although it is oscillated since last sixteen years there seems to be a general declining trend in agricultural workforce.

Turkey's economy uses an important source in terms of labor force in agriculture. With 5.5 million persons, the agricultural sector covers 20 % of the total employment as of 2016(Figure 4). The steady decrease in the employees of the agricultural sector, as of 1950, is related to the increasing mechanization in the sector , decreasing average land sizes and migration from rural to urban. Migration from rural areas to the urban, one of the most important pushing factors of the social demography. Comparisons made with the western countries put forth that Turkey has

still a crowded population in the rural areas and the migrations to urban would continue in the following years.

Even if the rural population is held down by social measures, the dynamics of the growth would progress towards the cities. In this perspective, it would be correct that the one of the most important problems in our economy is on-site employment of the rural population efficiently(18).

However, the combined data which we formed by using the new and former employment series published by the Turkish Statistics Institute (“TUIK”) indicate a significant fall in the agricultural employment after 2001. As for 2008- 2009, the crisis years, it was noticed that the agricultural employment increased (Figure 3). Since we could not notice in our data any attempt for opening the lands to agriculture, any investment run-up or any technical revolution, we are of the opinion that this increase, arisen in each crisis period, is not a voluntary but an “obligatory” employment and that this increase is not useful for agricultural productivity and would possibly cause more corruption in income distribution either.

Even if Turkey is a rich country in respect of agricultural areas, the constitution of the majority of the lands from small sections in terms of property ownership makes it difficult to benefit from the economy of scale particularly in annual arable crops and livestock. In Turkey, there existed cultivated agricultural land (including long life crops such as fruit trees) of 24.5 million hectares as of 2008. 21.5 million hectares of these cultivated lands consist of the agricultural lands where grains, vegetables are cultivated excluding long-life crops. It is reported that the size of the cultivated agricultural lands recessed particularly in 2006-2008. In addition to migration from rural areas to the urban, increasing in the rapid growth period, we are of the opinion that the drought, erosion and other climatic conditions have effective role on this recession(18).

According to the the report (21) published by Union of Chambers and Commodity Exchanges of Turkey (TOBB) that is the highest legal entity in Turkey representing the private sector, Of these employees, 20.6% was in agriculture, 27.2% was in industry and 52.2% was in tertiary sectors in 2015.

Turkish Agricultural Sector Report 2013 (22) published by Union of Chambers and Commodity Exchanges indicates that ,”Although total population of Turkey is increasing number of persons in relation with agriculture is decreasing. In similar , the employment rate in the agricultural sector is also slightly decreasing.”

According to the TURKSTAT data, about 2 million farmers left from agricultural production since last thirteen years. During this period agricultural share of GDP has decreased from 10,3 to 7,1. Employment share of agriculture in total employment has also been decreased about 15 %.



2.4 . Agricultural Sector in the Tenth Development Plan 2014-2018 (20).

During the Tenth Development Plan period; the share of agriculture sector is expected to rise as a result of acceleration in irrigation investments, especially in the GAP Region;

The Tenth Development Plan, covering the 2014-2018 period, will be a milestone in advancing the society to high prosperity levels, in line with the 2023 targets. The Plan was prepared in a global economic environment with protracted risks, uncertainties, changes and transformations, with emerging and reshaping power balances among developed and developing economies.

Current Situation (20)

- At the beginning of the Ninth Development Plan period, due to the continuous and rapid changes in the world food supply-demand balance and excessive speculative movements, prices of agricultural products increased gradually causing instability, hence, these facts brought along a food crisis. In Turkey, agricultural product price index rose faster than the producer price index over the 2007-2012 period. Thereby, agriculture sector became relatively lucrative, thus employment rose due to increased investments in the sector.
- Despite the fact that agriculture sector shrank significantly as a result of the drought in the country in 2007, the beginning of the Plan period; it exhibited an average annual growth rate of 2.1 percent in the 2007-2012 period. When year 2007 is excluded, average annual growth rate of the sector reaches 3.9 percent. The share of agriculture in total employment was 24 percent in 2006 and stood at 24.6 percent in 2012. The

share of agriculture in GDP was 8.3 percent at the beginning of the Plan period and decreased to 7.9 percent by the end of 2012.

- Turkey ranked 36th among 105 countries in the Global Food Security Index in 2013. According to this index, in dimensions of food security, Turkey ranked 44th in the accessibility (economic accessibility),
- Small and fragmented structure of agricultural businesses, insufficiencies in market access and organization of farmers together with the needs in training and extension services constitute important problem areas.
- Until 2006, 0.6 million hectares of land has been consolidated and this amount is expected to reach 4.2 million hectares by the end of 2013. Moreover, net cumulative area opened to irrigation by the General Directorate of State Hydraulic Works (DSİ) which was 2.53 million hectares by the end of 2006, has increased to 2.81 million hectares by the end of 2012, and is expected to reach 2.91 million hectares at the end of the Plan period. The harmonization between land consolidation and irrigation investments, as well as increasing irrigation rate and efficiency has been given priority

Objectives and Targets(20)

- It is aimed to create an agriculture sector that aims to provide sufficient and balanced nutrition for the society, utilizes advanced technologies, has resolved infrastructural problems, has an effective organization and high productivity, and has increased its international competitiveness by its demand driven production structure and utilizes natural resources in a sustainable manner
- It is expected that; the average annual growth rate of agriculture sector will be 3.1 percent, share of agricultural employment in total employment will decline to 21.9 percent, and share of agriculture sector in GDP will be 6.8 percent at the end of the Plan period.

Policies (20)

- In agriculture, effectiveness of agricultural businesses will be increased on the basis of business size with sufficient level of income according to the production type, considering the social structure of the sector.
- Legislative and institutional arrangements will be put into action providing the entirety of agricultural businesses consisting of a significant number of scattered parcels, preventing land fragmentation, and constituting a well-functioning agricultural land market.
- Coordination between public institutions on land consolidation activities, especially those related to irrigation and transportation will be maintained and irrigation ratio will be increased by enabling the agricultural land development services. Transition to the closed irrigation systems will be accelerated by renewing the existing channels and classical systems at the water transmission and distribution facilities.
- Agricultural supports will be arranged according to the social purposes and production focus on the basis of agricultural basins and parcels. Furthermore, environment, plant, animal and human health will be taken into account on support policies and the effectiveness of supports will be assessed through monitoring. Compliance between the crop pattern and water potential will be

considered in designing agricultural support programs, importance will be assigned to certified production methods. In addition, agricultural insurance schemes will be expanded by broadening their current scope.

- Information and communication technologies will be utilized effectively for the vocational and technical education and extension services related to agriculture.
- Despite the decline and aging in rural population, the labor force participation rate in rural areas has increased from 50.8 percent to 53.6 percent. However, rural labor force is predominantly employed in agriculture sector. In 2007-2012 period share of agriculture in rural employment was around 61 percent, while non-agricultural employment grew by 600,000 people, agricultural employment rose by 1.1 million in rural areas.
- In the Plan period, despite the rise in agricultural employment, rural poverty remained significant mainly due to the fact that agricultural employment is largely in subsistence farming enterprises that contain significant level of underemployment. Size and marketing issues of these enterprises hinder their earning sufficient and regular income, which triggers rural poverty and internal migration. In confronting the potential decline in agricultural employment, increasing non-agricultural employment opportunities and employability of rural labor force in non-agricultural sectors turn out to be even more crucial. In this context, in 2007-2012 period, share of rural labor force with a high school degree or more rose from 18 percent to 18.2 percent

Rural Development (20)

Current Situation

- During the Ninth Development Plan period, rural development policies were implemented in coordination with agricultural policies to support primarily improvement of rural infrastructure and diversification of non-agricultural economic activities.
- For a more effective rural policy management, the National Rural Development Strategy and the Rural Development Plan were put into force for the first time, a multilateral committee was established to monitor implementation of the Plan, and implementation was delegated to local institutions to a great extent.

Objectives and Targets

- The main goal is making minimum level of wealth in rural areas converge towards country averages. Innovative methods of rural service delivery will be devised taking into account the new rural demography and geographical disadvantages; the institutionalization required for supply-oriented rural service delivery will be achieved through cooperation of central and local public administrations.
- The main objective of rural development policy is to improve the living and working conditions of the rural society in their own locality. The general framework of the rural policy is composed of; strengthening rural economy and employment, developing human resources and alleviating poverty, improving social and physical infrastructure, and protecting natural resources and rural environment



SECTION III

Groundwater Irrigation Cooperatives

IRRIGATION COOPERATIVES ORGANISATIONAL STRUCTURE



Figure 5. Groundwater Irrigation Cooperatives Organisational Structures entire Turkey

Turkish Irrigation Cooperatives Central Union (TÜS-KOOPBİR), have been representing 27 Regional Unions established for 2,500 Irrigation Cooperatives covering approximately 800,000 hectares area of 300,000 cooperative members of farmers (together with the families total population is about 1.800.000). Out of 700,000 hectares, 500,000 hectares have already been irrigated

by groundwater wells while remaining 200,000 hectares have been irrigated by small dams. 95% of these areas have surface irrigation methods as only 5% of them have pressurized irrigation methods. On the other hand, we also have 160,000 hectares area having groundwater wells but not having completed electrification units, not having pumps and on - farm irrigation development.

As is known, groundwater resources are strategic and safe resources for the countries because in groundwater resources there is no need for spending time and money to reserve the water, there is no evaporation loss, there is no purification cost, and there is almost no possibility for nuclear pollution. Having semi-arid/arid climate, Turkey needs irrigation so much for agriculture and uses these strategic resources in certain areas which have limited possibilities to use surface water. In Turkey, out of 13.7 billion m³ groundwater resources, 12.8 billion m³ is used for drinking-potable-industry-irrigation needs. 55% of above mentioned 12.8 billion m³ resources (7 billion m³) is used for groundwater well irrigation by the irrigation cooperatives under TÜS-KOOPBİR.

Therefore, water saving and efficient use of the water in groundwater well sourced irrigation are crucially important. Recent global climate changes and desertification/drought threats to Turkey increase the importance of the water efficiency in the groundwater well irrigation networks. On the other hand, taking the water from the wells to the surface and conveying it to the farmers' lands require energy and it is becoming costly day by day for the farmers. It is clear that to use water saving irrigation methods (center pivot, linear moving, constant sprinklers, portable sprinklers, drip, etc) will decrease electricity energy costs as well. But, electricity energy will be still most important input for farmers. Then, the logical way for the cooperatives is to produce their own energy.

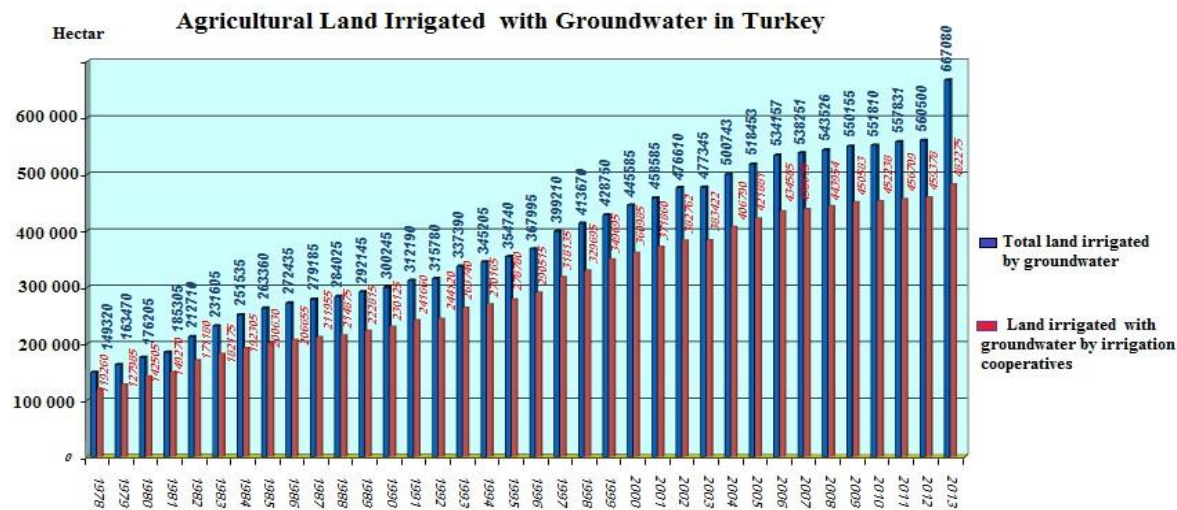


Figure 6. Agricultural land irrigated with groundwater in Turkey

Irrigation cooperatives have played very important role to develop groundwater irrigation effectively since 1970. It is known 273 622 documented well, about 180 000 undocumented well for groundwater irrigation. In order to efficiently run these well irrigation cooperatives undertook a mission. Since the beginning of 1970 Groundwater cooperatives reached 482 275 hectares of irrigated area. This development is seen in the above graph (Figure 6). This graph demonstrates the importance of cooperatives in agricultural irrigation. 73% of irrigated land is irrigated with groundwater irrigation cooperatives in our country.



SECTION IV

4. Some Results of the Survey

4.1. Profile of the survey respondents

Survey respondents are the farmers participating to the symposium from different regions of Turkey

Number of survey respondent farmers is 150 , %33 of them is graduated from primary school, 20% is graduated from secondary schools, 30% is graduates from high school, 16% of the survey respondents is graduated from University.

Reports of Agricultural Organization and Production (TUIK 2014) show that 67,8 % of the agricultural workforce has primary and secondary school education. 7,1 % of the Agricultural workforce has high school and university education

10 % of survey respondent farmers have 1 children, 43 % of them have two children, 38 % of them have 3 children ,8% of them have 4 children and more .

81% of the survey respondent farmers declared that they are farming since two generation

79%of the survey respondents are food farmers while 17% of them livestock farmers

Age distribution of the survey responders are;

25 % of them is between 28-45 years old

55% of them is between 45-60 years old

20% of them is between 60-72 years old

83% of the survey respondent farmers declared that more than 50% of their land is irrigated lands.

45 % of the survey respondent farmers declared that they don't have any other household income except for agriculture .

In summary ;

The survey respondent farmers are educated , middle aged food farmers and half of them depend on only agricultural income.

4.2.Key Findings of the survey conducted by Hydropolitics Association and TUSKOOP-BİR

Survey was carried out in the framework of the Demographic and Structural Changes in Agricultural Labor Force in Turkey Project. This project is carried out by Hydro-politics Association and Central Union of Irrigation Cooperatives (TUSKOOP-BİR)together.

The survey was carried out in the symposium held by Central Union of Irrigation Cooperatives on 04-08 December 2016. The survey is conducted with 150 Farmers with face to face communication during the symposium.

Data obtained from the survey was evaluated in the Applied Research Center of Hydro-politics Association in İstanbul. Preliminary results and some key findings obtained from the survey are presented belowe;

4.2.1 .Distrubution of Agricultural Production

Rate of agricultural crop farming and livestock farming is very different between developed and developing countries. The crop farming rate is 30% while livestock farming rate is 70% in developed countries.In developing countries this rates are 70 %,30 % respectively .

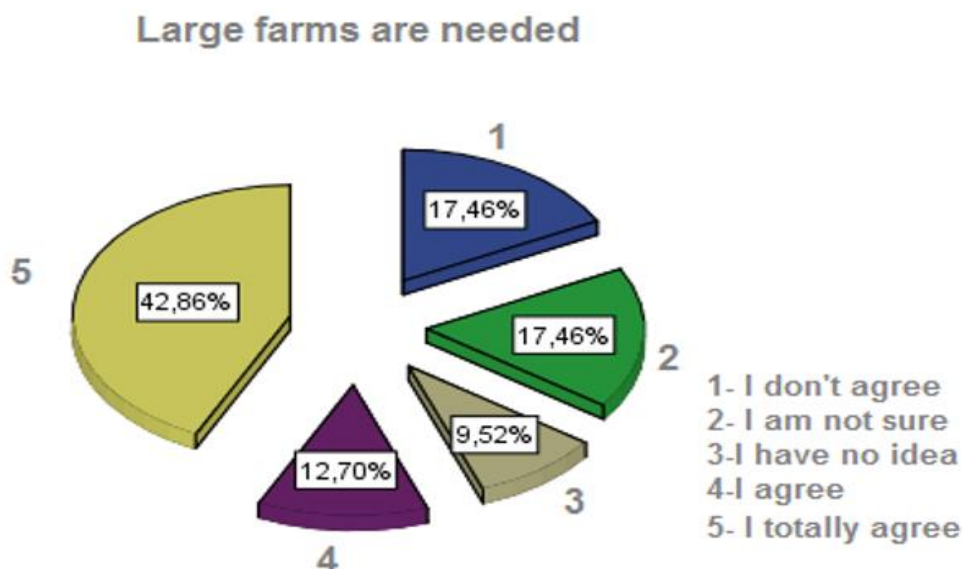
Survey results showed that 79 % of survey responded farmers are in food farming while 17 % is in livestock farming .

75 % of survey responded farmers think that more attention should be given to livestock farming



Farming is still an industry of family businesses, It is strictly needed to have optimum sized farms with bigger profit margins, small farms are subject to a lot of competition

More than half of the survey respondents (55) think that larger farms are needed.



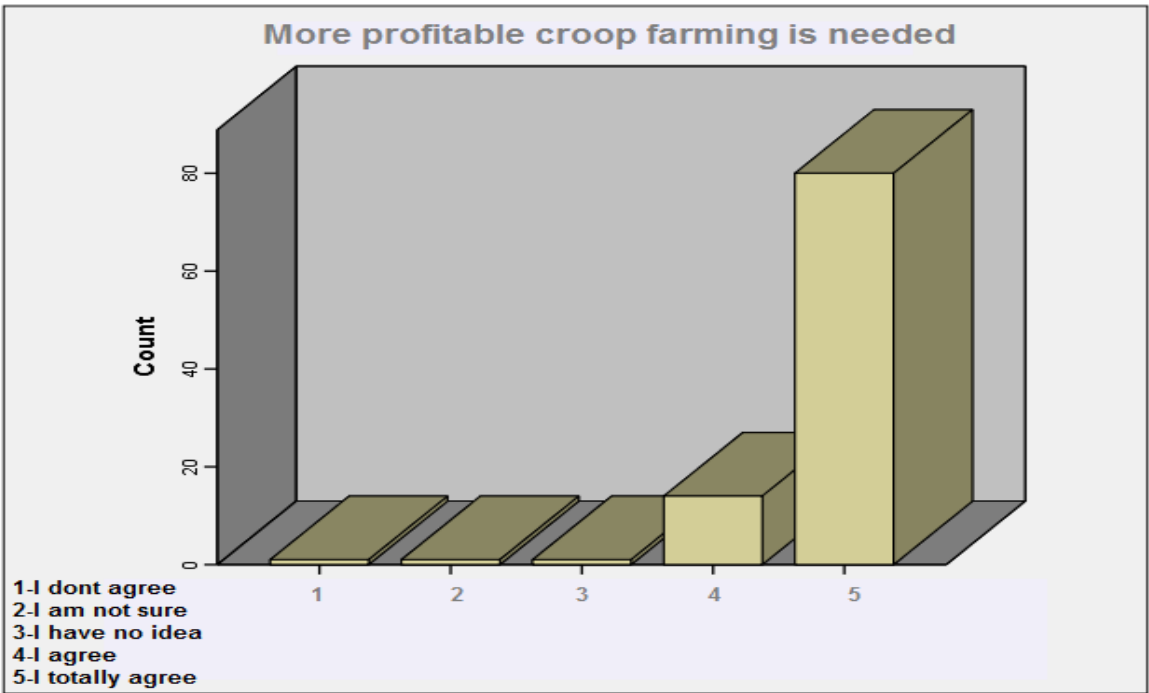
As for the arable lands, there is also a decrease in Turkey in recent years; we think that migration from rural areas to urban in the fast-growth period would have an important role.

Even if Turkey is a rich country in respect of agricultural lands, the fragmentation of the lands into small pieces of land ownership makes difficult to benefit from the economy of scale in particularly annual arable crops and livestock(19). InTurkey, cultivated agricultural land (including long life plants such as fruit trees) of 24.5 million hectares existed in 2008. Arable lands - on which grains and vegetables, excluding long-life plants are cultivated - constitute 21.5 million hectares of the total cultivated agricultural lands. It is observed that the number of the cultivated agricultural land considerably recessed particularly in 2004-2008.

In Turkey, in accordance with the legal situation, 3,076,650 farms cover total land of 184.3 million decares. Average size of the land for these farms is 59.9 decares and this size is below the average farm sizes of Europe and USA, being successively 174 and 180 decares. (table 3).However, it should be emphasized that the land sizes also visibly differ from each other in EU. The farms, the sizes of which are below 100 decares, correspond to 85% of the total number of farms. One of the most important problems in transition from extensive agriculture to the intensive agriculture is the ownership of the fragmented small pieces of land(19).

Table 3. Farm Size by Countries

Country	Mean Farm size (hectare)
Turkey	0,6
Australia	3.124,2
USA	173,6
France	58,7
Germany	58,6
Holland	27,4
EU mean	16,1



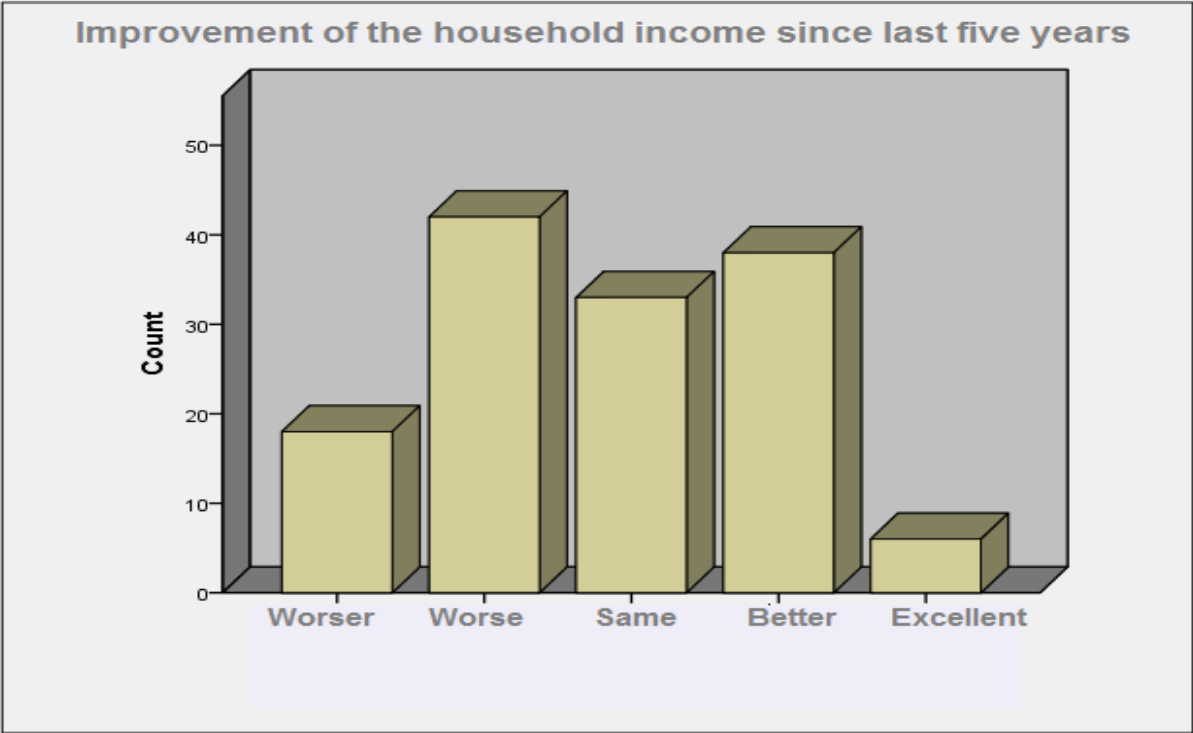
More than 80 % of the survey respondents think that more profitable crop farming should be chosen

4.2.2. Income of the Farmers in Agricultural Sector

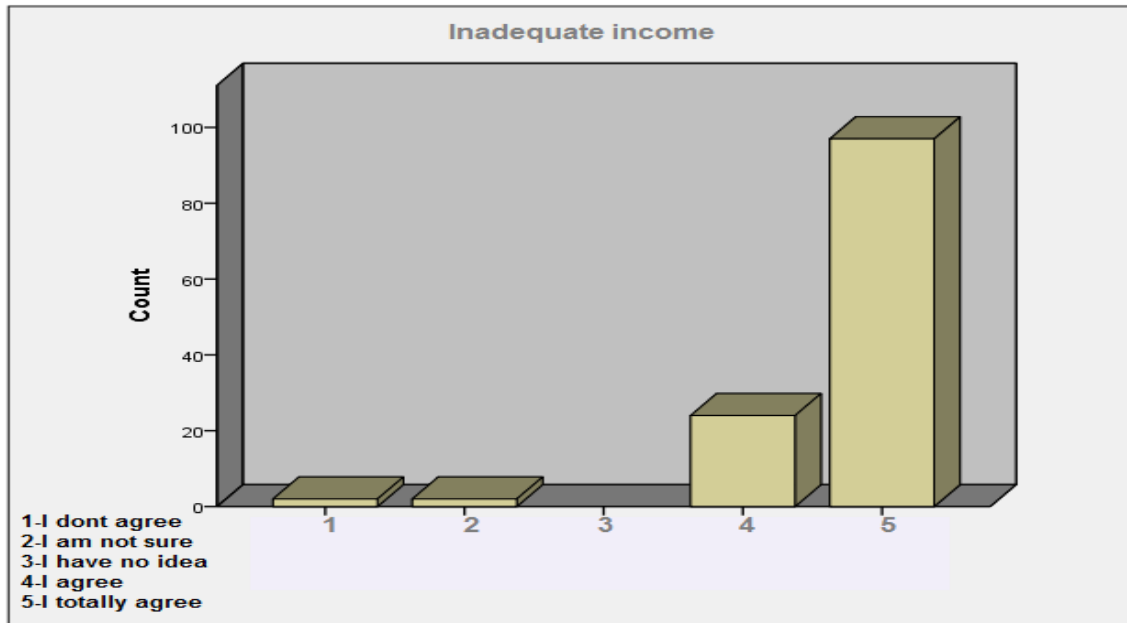
The agriculture is practically the only income source for the rural population. The low level of human capital and geographic position in the countryside constitute significant handicaps that hinder movement of agricultural labor to other sectors in Turkey.

A rapid fall in both the agricultural labor force and in the share of agriculture in GNP occurred between 1968 and 2006 in Turkey. In 2007, 25.5 % of total labor force is employed in agriculture, but 62 % of Turkish labor force was engaged in agriculture in 1968 . Nevertheless, agriculture is still the most important provider of employment in the Turkish economy. Agriculture is by far more important contributor to total national employment in Turkey than in the EU-27, except for Romania.

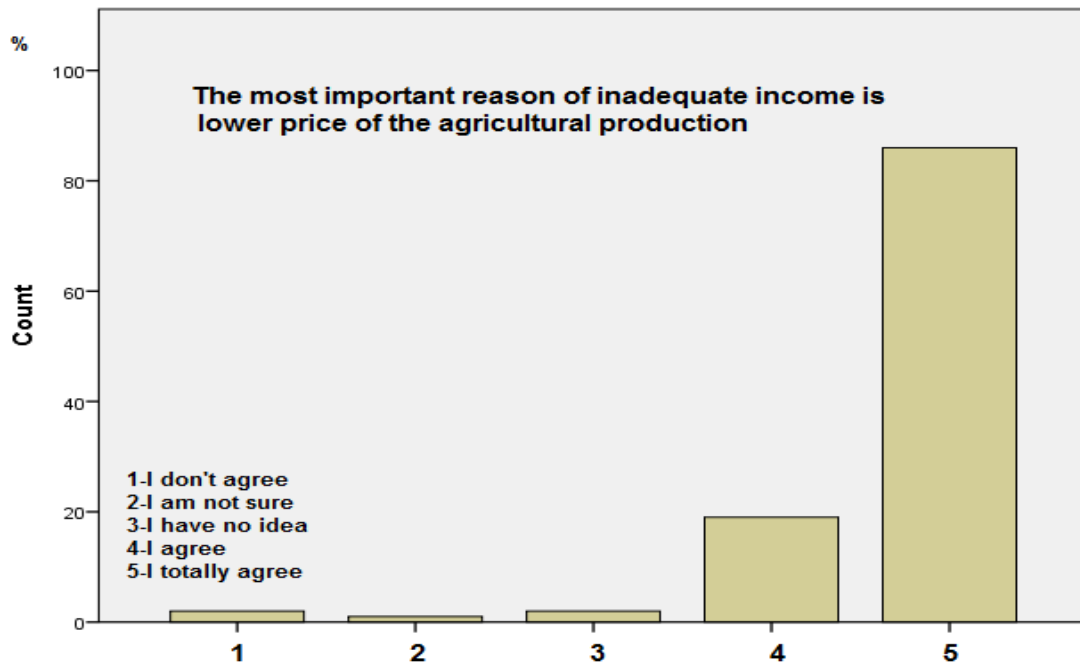
45 % of the survey respondents said that they have no household income except for agriculture. While 31% of the survey respondents think that household income is better and very good than 5 years ago, 67 % of them said same and worse.



- More than 97 % of the survey respondents think that their income is inadequate



- 95 % of the survey respondents think that lower price of their agricultural production is the most important reason of their inadequate income



4.2.3. Selling and buying agricultural land

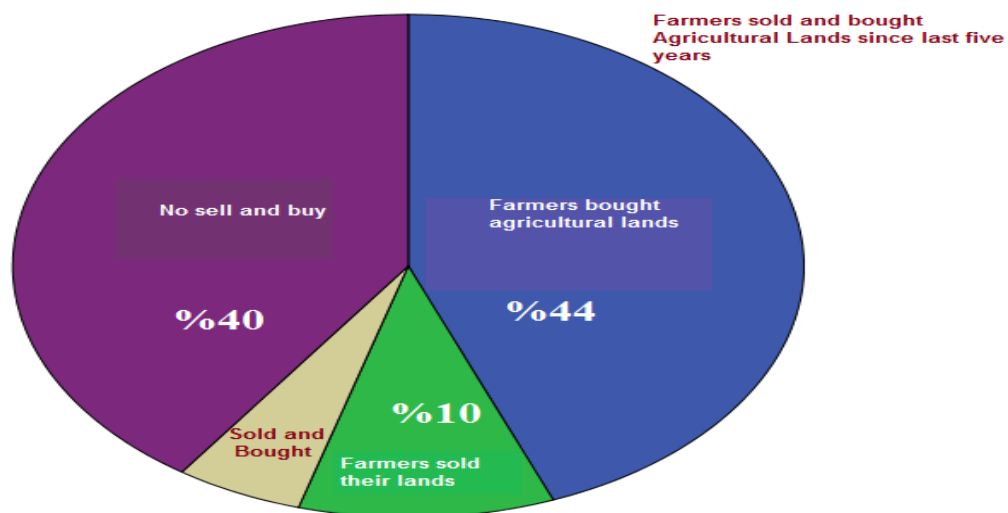
Only 10% of the survey respondents have sold their agricultural lands since last 5 years.

44% of the survey respondents have bought agricultural lands in different size.

The reason of the selling their agricultural lands are as follows ;

- 44 % of the survey respondents, for the payment of their debts
- 12 % of the survey respondents, to buy agricultural land from different place

- 10 % of the survey respondents, to buy a flat in cities .
- 12 % of the survey respondents, to establish a business for their children.
- 6 % of the survey respondents, for the wedding preparation of their children.



4.2.4. Farmers Membership to water user associations, cooperatives etc.

65 % of the survey respondents is a member of at least one related association or cooperatives ,

58 % of the survey respondents is a member of Agricultural Credit Cooperative,

6 % of the survey respondents is a member of Agricultural Development Cooperative,

the survey respondents explained the reason of the membership of this cooperatives as follows;

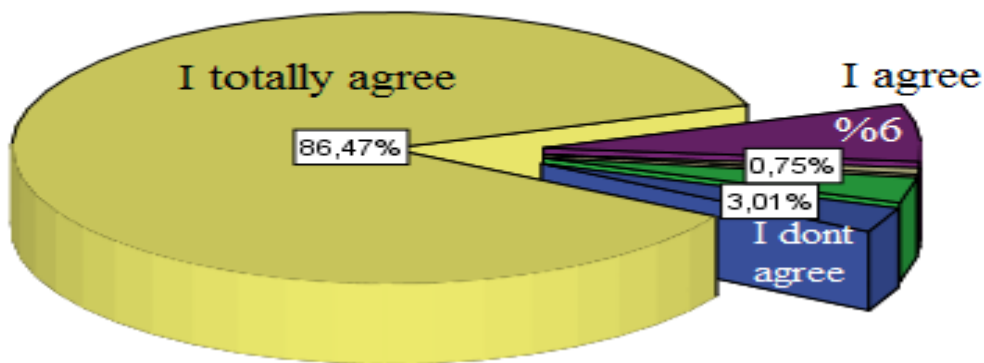
1. 34 % of the survey respondents said that it is important to buy and to sell the production
2. 26 % of the survey respondents said that it is important to buy fertilizer and seed,
3. 27 % of the survey respondents said that it is important to irrigate the lands

4.2.5. Agricultural governmental subsidy

63 % of the survey respondent farmers said that they couldn't get any governmental subsidy or got very little governmental subsidy while 27% of the respondent farmers said that they got enough governmental subsidy.

92,5 % of the survey respondent farmers want government to increase governmental subsidies.

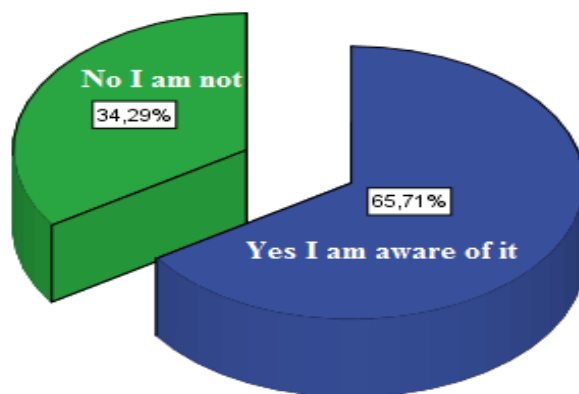
Governmental subsidies must be increased



4.2.6. Participation to education and training programs

65 % of the survey respondent farmers are aware of the education and training activities for Agricultural Production and related issues while 35 % of them are not.

Education and Training programmes for agricultural production and related issues

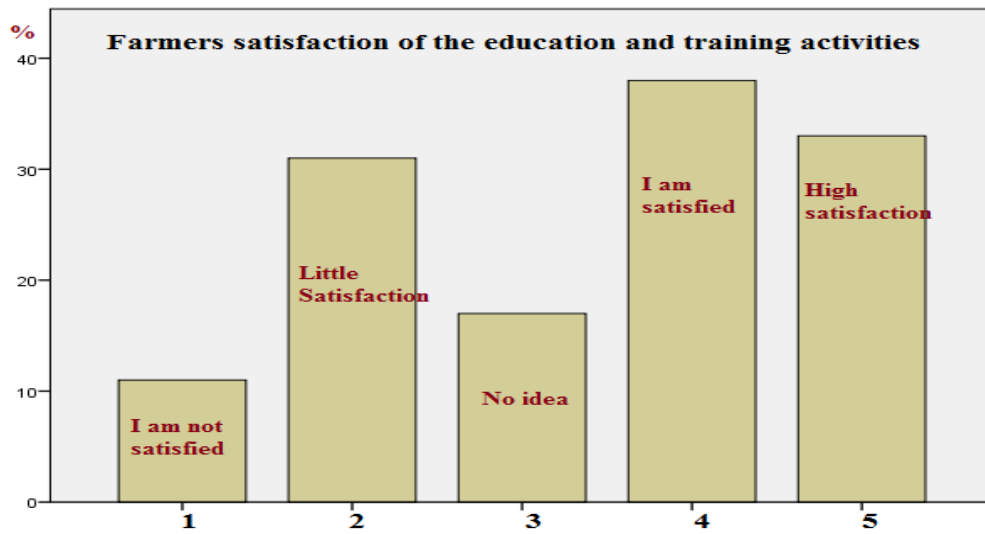


21 % of the survey respondent farmers are not participated these education and training activities at all.

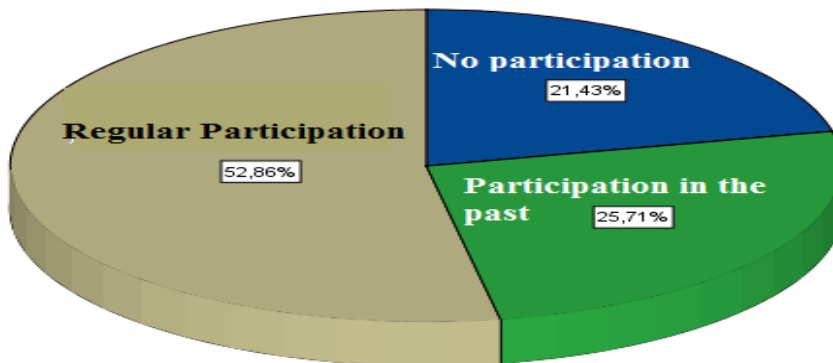
26 % of the survey respondent farmers said that ,Yes they were .

53 % of the survey respondent farmers said that “They are participating these activities regularly “

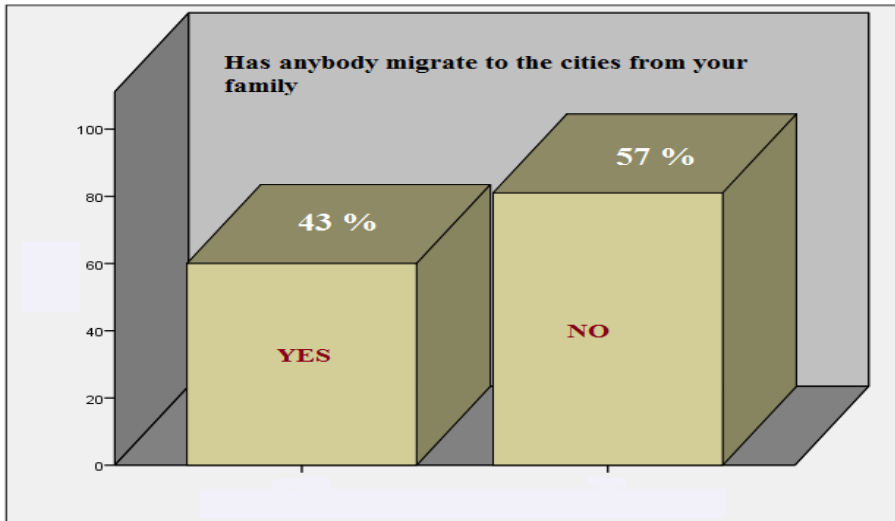
55 % of the survey respondent farmers participated this education and training activities have found them very useful and satisfactory while 45% of them are not satisfied saying that no new information in the courses.



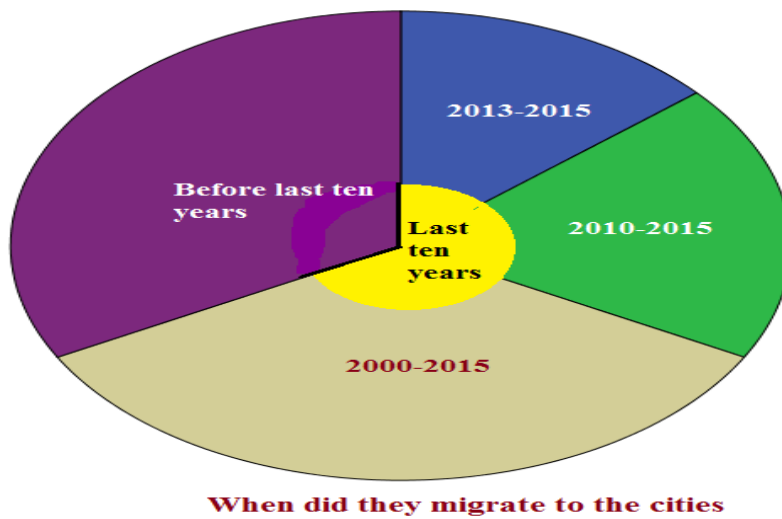
Farmers participation to Agricultural Education and Training Courses



4.1.7. Farmers migration tendency to the cities

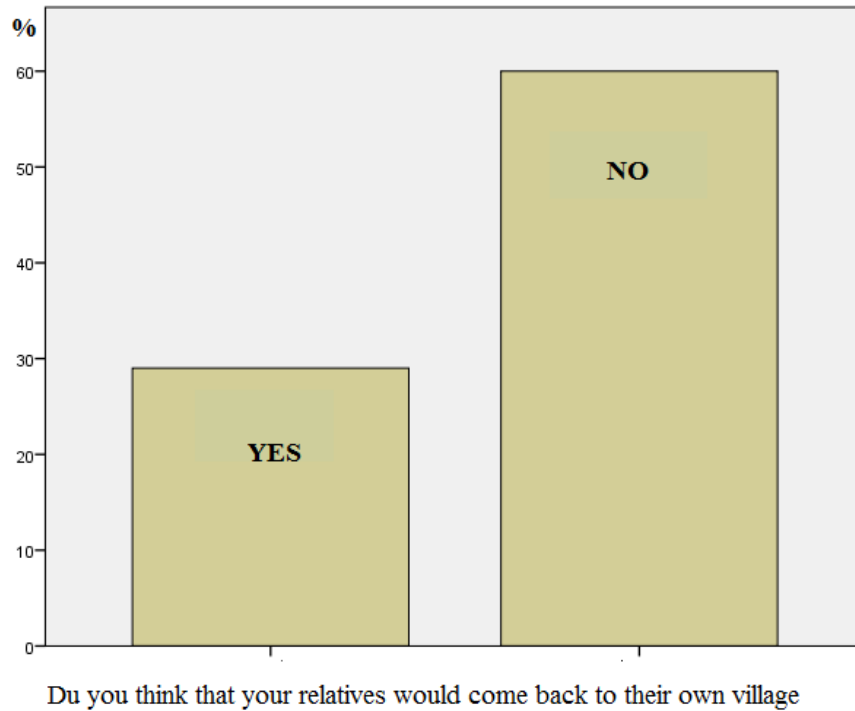


43 % of the survey respondent farmers said that “ some of their relatives has migrated to the cities “

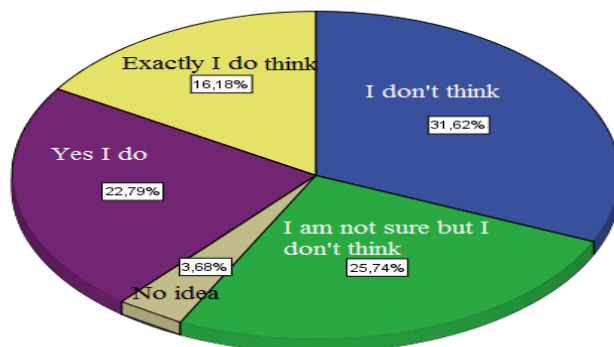


66 % of the survey respondent farmers’s relatives has migrated to the cities in last 10 years

67 % of the survey respondent farmers said that relatives wouldn’t come back to their village again



Do you think that work in Agricultural Sector is recommendable for your children

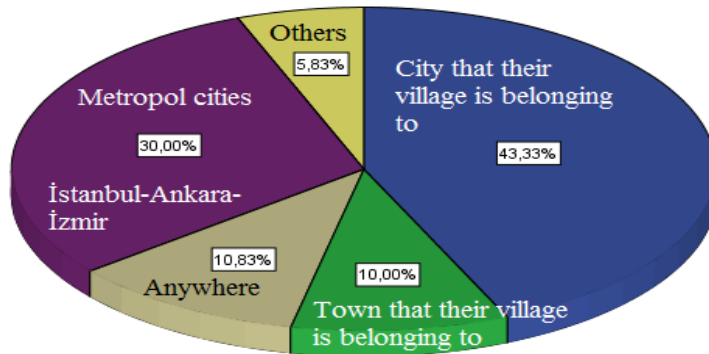


57 % of the survey respondent farmers believe that work in Agricultural Sectors is not recommendable for their children.

67 % of the survey respondent farmers believe that unproductive soil is one of the reason to migrate to the cities.

49 % of the survey respondent farmers believe that attractive city life is one of the reason to migrate to the cities.

What do you think about the province that migrants are generally choosing



The survey respondent farmers think that %30 migrants choose metropolitan cities while 53% choose cities or towns which their village is belonging to

Key findings on farmer migration reasons from rural to urban

- 93% inadequate income
- 93% Lower price of agricultural production
- 76% finding another job

Social factors

- 52 % to reach higher living standards
- 50% their family wants to migrate to the cities for attractive city life
- Decreasing number of neighbors and population in the village
- 83 % to send their children high schools and universities
- 76% difficult working conditions in agricultural sector.
- Difficulties to reach health care facilities in the villages and towns

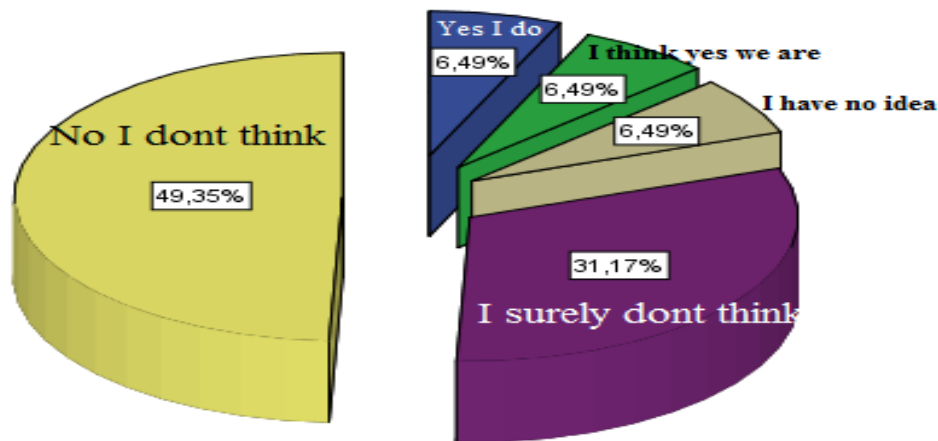
4.1.8. Lower prices of agricultural production and farmers influence on setting prices

89 % of the survey respondent farmers think that they have no power and influence on setting the agricultural production prices that is very low when they are selling their production

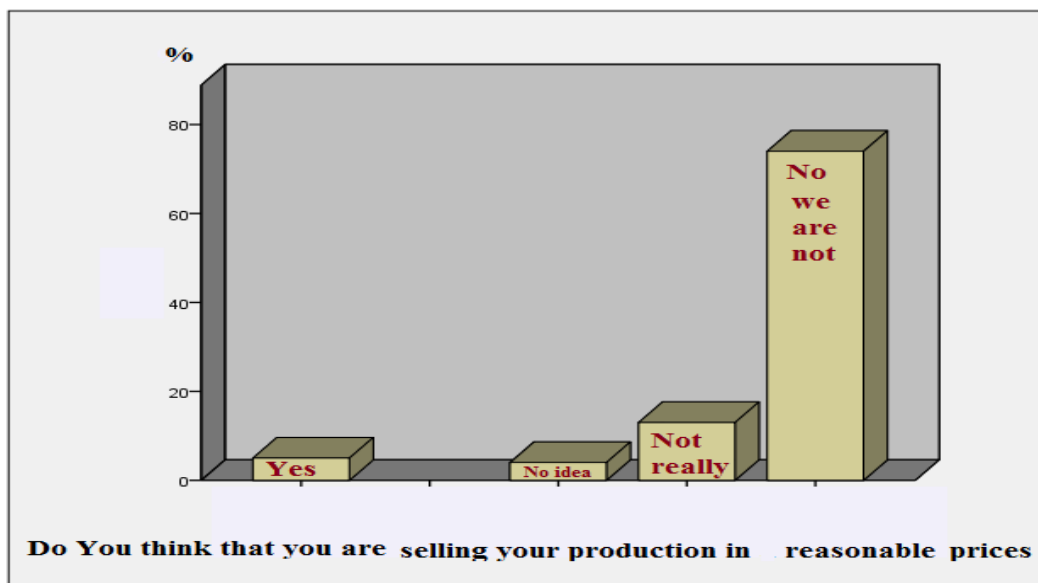
11 % of the survey respondent farmers think that they have very limited power and influence on setting the agricultural production prices

80,5 % of the survey respondent farmers think that they are not strong enough for competition and import of the agricultural products

Do you think that you are strong enough for competition and import of agricultural production



90,5 % of the survey respondent farmers think that they are not able to sell their own production in reasonable prices



4.1.9. Other practical problems related with agricultural sector in Turkey

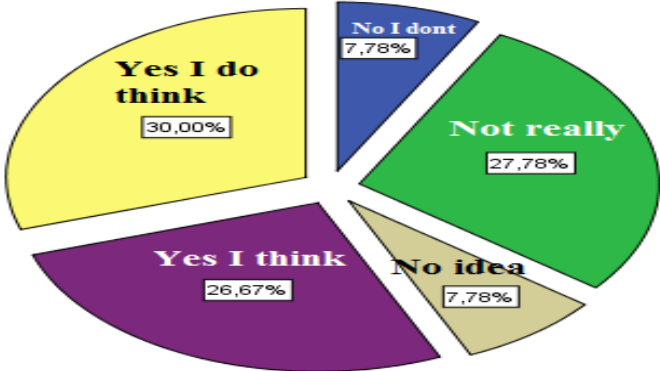
93 % of the survey respondent farmers think that the most important problem is rising prices in agricultural production income (oil,fertilizer etc)

86 % of the survey respondent farmers think that their agricultural land area is not large enough to productive agriculture

68 % of the survey respondent farmers think that they face some problems in irrigation

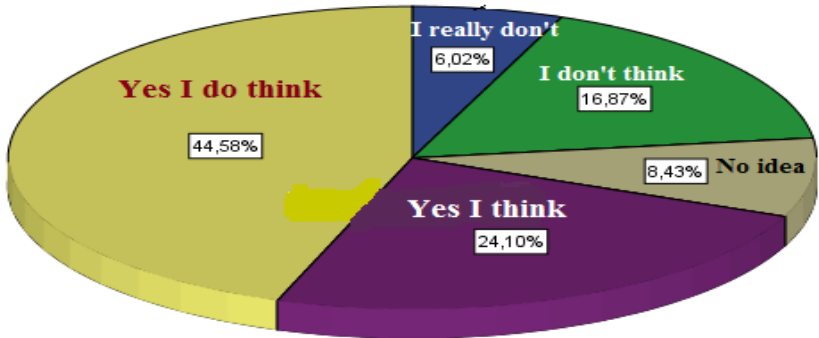
56 % of the survey respondent farmers think that their soil quality is getting worse lowering agricultural production productivity

Do you think that your soil quality is getting worse lowering productivity



69 % of the survey respondent farmers think that climate change has adversely affected their agricultural production

Do you think that climate change has adversely affected to your agricultural production



SECTION V

5. Conclusions

This survey was carried out in the framework of the Demographic and Structural Changes in Agricultural Labor Force in Turkey Project. This project is carried out by Hydropolitics Association and Central Union of Irrigation Cooperatives (TUSKOOP-BİR) together.

The survey was carried out in the symposium held by Central Union of Irrigation Cooperatives on 04-08 December 2016. The survey is conducted with 150 Farmers with face to face communication during the symposium. The survey respondent farmers are educated , middle aged food farmers and half of them depend on only agricultural income.

This study aims to analyse current situation and identify reasons of leaving of young generation from agricultural sector. Sustainable agricultural production is essential for food security and social stability of the developing countries.

Investigation shows that the farmer population is aging and their children are standing away from agricultural sector. It means that agriculture may face a new food security issue in coming decades. It should be noted that if there will be enough people to work on the farms or not. Since it is the young who mostly move to cities, ageing will be at its most intense in rural areas. Already in many countries, farming is regarded as an old man's activity and Turkey is approaching to this inevitable end if a sustainable solution can't be found.

It is difficult to find enough statistical data about farmers age, gender, income, expectations etc. There is a vital need to conduct a detailed agricultural workforce census in soon

Preliminary evaluation of the survey results indicate following main points ;

- Structural problems in Turkey's agricultural sector push farmers and young farmers out from agricultural sector.
- Young farmers prefer to live in cities while ageing farmers continue because there is no wholesale movement of older farmers out of farming.
- More than half of the aging farmers think that working in agricultural sector is not recommendable to their children
- Farmers are more open to their children taking on a different career.
- There is a consistent view that farming no longer has the status it once had.
- Most of the farmers believe that climate change has adversely affected to agricultural production
- The survey results show the rate of average age increasing in dairy farmers
- It has been difficult to find young temporary agricultural workers as the years go by.
- Turkey's agricultural workforce is in a demographical changing period .
- The most effective factors on leaving from agriculture have been identified as unsatisfied salaries and expectations to better living standards in the cities.
- The average age of farmers is 50,4. However the average age of the employed population (15 years of age and over) in the 2013 census was 41, five and a half years younger.

Turkey is in the progress to overcome these obstacles. Turkish government recently accepted very comprehensive “National Agriculture Project” and “ a 30 000 TL promotion grant for young farmers to encourage them to work in agricultural production.

Final report of this study will include more detailed explanation and evaluation.

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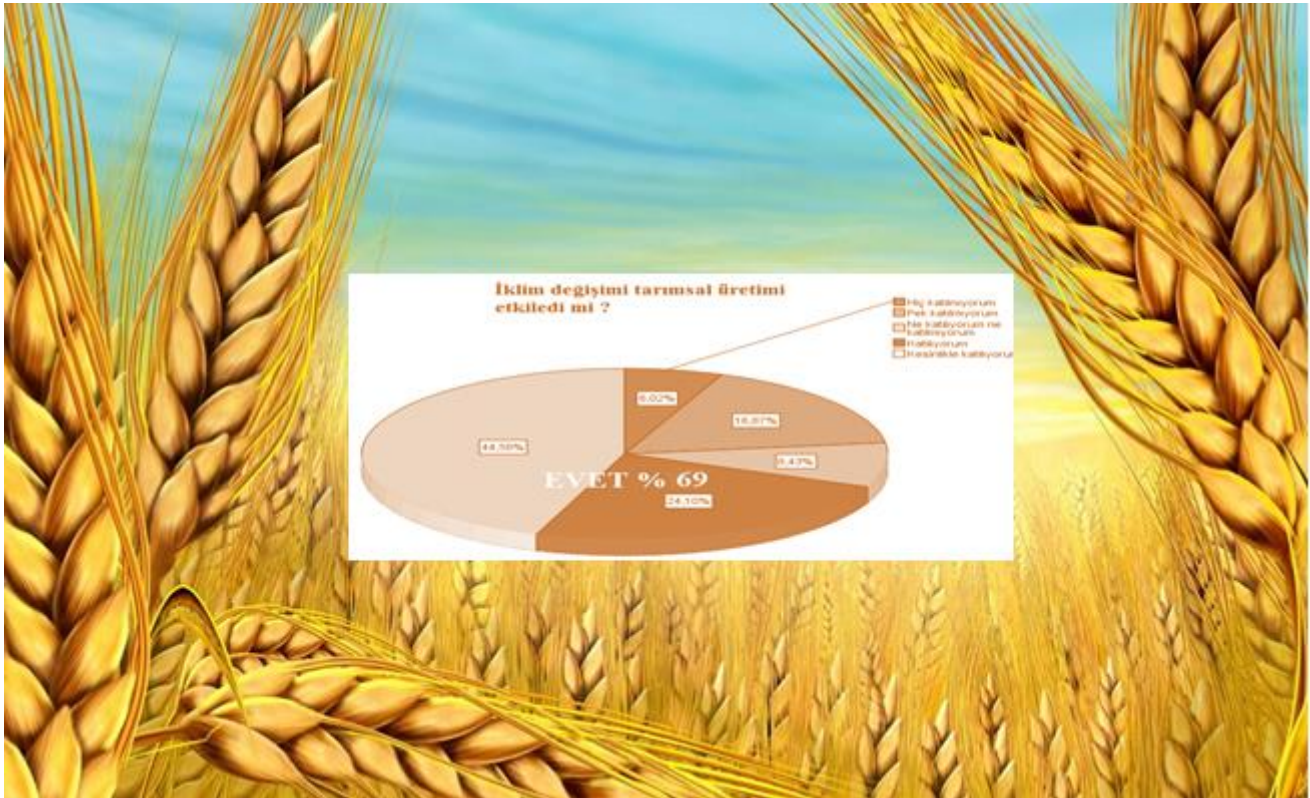
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DEMOGRAPHIC CHANGES IN TURKEY'S FARMERS



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