Nevşehir Bilim ve Teknoloji Dergisi Cilt 6(ICAFOF 2017 Özel Sayı) 172-177 2017
DOI: 10.17100/nevbiltek.332091
URL: http://dx.doi.org/10.17100/nevbiltek.332091

Supports Provided to Irrigation Systems in Turkey

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Abstract

Changes in the amount and distribution of rainfall in the world due to the global warming limit the usable water resources. As in developing countries, most of the water in our country is also used in agriculture. In the 21st century, the effective use of water resources and the necessity of getting more crops per every drop of water has come to the agenda. The use of pressurized irrigation systems which provide water saving in agriculture and make it possible to irrigate larger areas with the same water is recommended. For this purpose, the establishment of pressure irrigation systems has been supported by the Ministry of Food, Agriculture and Livestock since 2006.

In this study, the support given to the pressurized irrigation systems by the Ministry of Food, Agriculture and Livestock was evaluated, problems and solution proposals were given.

Key words: Sprinkler irrigation, drip irrigation, irrigation supports, Turkey

Türkiye'de Sulama Sistemlerine Uygulanan Destekler

Öz

Dünyada küresel ısınmanın etkisiyle yağışların miktar ve dağılımın değişmesi, kullanılabilir su kaynaklarını kısıtlı hale getirmektedir. Gelişmekte olan ülkeler de olduğu gibi ülkemizde de en fazla su tarımda kullanılmaktadır. 21.yüzyılda su kaynaklarının etkin kullanımı ve her damla sudan daha fazla ürün alma gerekliliği gündeme gelmiştir. Tarımda su tasarrufu sağlayan ve aynı su ile daha geniş alanların sulanmasını mümkün kılan basınçlı sulama sistemlerinin kullanımı önerilmektedir. Bu amaçla ülkemizde Gıda Tarım ve Hayvancılık Bakanlığı tarafından 2006 yılından beri basınçlı sulama sistemlerinin kurulması desteklenmektedir.

Bu çalışmada, ülkemizde Gıda, Tarım ve Hayvancılık Bakanlığı tarafından basınçlı sulama sistemlerine verilen destekler incelenmiş, bu konuda görülen sorunlar ve çözüm önerileri verilmiştir.

Anahtar Kelimeler: Yağmurlama sulama, damla sulama, sulama destekleri, Türkiye

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1. Introduction

Water, an indispensable element of living life, is also the basic input of agriculture at the same time. Water resources are reduced on the one hand due to climate change, and on the other hand, misapplication and unconscious use are deteriorated by eventual pollution. As a result, available water resources are gradually decreasing.

The inability of the world's available water potential to meet the demands of an increasingly global population has resulted in a strategic resource. The most important factor that will affect the use and quality of water resources in the 21st century will be population. The total population of the world has exceeded 7 billion by 2015 and it is predicted to reach 9.15 billion by 2050 [1].

In our country, 28.05 million hectares of arable land can be irrigated to 25.75 million hectares. With the available water potential, the area that can be irrigated technically and economically is 8.5 million hectares. As of the end of 2015, 3,935 million hectares, which constitute 63% of the total area of 6,225 million hectares opened for irrigation in our country, are being irrigated by DSİ (State Hydraulic Works). This rate will be 76,5 % with the reach of 6.5 million hectares of irrigation water by DSİ. In our country, about 7.5 million hectares of arable land that can be economically irrigated can still be irrigated by about 73% [1].

In irrigation networks where open channels and canals are used, water losses are quite high. To avoid losses, piped water distribution network is being used in new irrigation projects. Only friction losses occur in pipe systems. This is low enough to be ignored. Therefore, in pipe systems; water loss is minimized, and water saved better. In terms of irrigation methods, the most water loss occurs in 35-60% of surface irrigation method. In drip irrigation water loss is minimal and ranges from 5% to 20%. In order to reduce water loss in agriculture and to be used in sectors where there is water stress in saving water, it is necessary to spread sprinkler and drip irrigation [2].

Pressure irrigation methods are not used at the desired level, although they provide high irrigation efficiency and yield increase [3]. According to soil inventory studies in our country; 73% of the irrigable areas have grades of 0-12 % . For this reason, irrigation with pressure irrigation methods is required. However, less than 10% of the irrigable areas in our country are irrigated with pressurized irrigation [4]. All of Israel's irrigated farmland, 95% of France, 62% of Egypt, 50% of the United States, 45-50% of Italy and Spain are irrigated with drip and micro irrigation methods [5], [6].

Pressurized irrigation systems have been supported by the Ministry of Food, Agriculture and Livestock since 2006 in order to use the soil and water resources effectively. In this study, the support given to the pressurized irrigation systems by the Ministry of Food, Agriculture and Livestock in our country was evaluated, the problems and solutions suggested in this issue were given.

2. Support to Pressurized Irrigation Systems by The Ministry of Agriculture Agriculture and Livestock

Within the framework of the Rural Development Plan of the National Agricultural Strategy, Ministry of Food, Agriculture and Livestock, Has been implementing the Rural Development Investment Promotion Program. Within the scope of the "Support Program for Rural Development Investments" Support is provided by upward approach of the base. In Supported projects; It is necessary to carry out

features such as participation, local capacity and organizational development, employment creation, increase of producer income. In addition, rural infrastructure rehabilitation projects and machinery-equipment procurement projects are supported.

Pressurized irrigation systems were first covered by the Ministry of Food, Agriculture and Livestock in 2006. The supports were funded by the World Bank and started on 16 pilot provinces. Then the cover shaped as financing is provided entirely from the national source. Supports provided to public pressure irrigation projects were finalized in 2011. Individual Irrigation Machinery and Equipment Supplements carried out within the scope of the Communique prepared according to the conditions that develop every year are being continued in the direction of positive feedbacks and requests from the sector. Supporting GTHB and Ziraat Bankası A.Ş. General Directorate and Agricultural Credit Cooperatives. The widespread use of small companies provided by farmers is effective. Support of pressure irrigation systems is carried out by the "Department of Agricultural Support of the Ministry of Food, Agriculture and Livestock" [7].

2.1. Legal Regulations

Legislative support to irrigation systems in our country is carried out by the Ministry of Food, Agriculture and Livestock. In support to irrigation systems; The Communiqués revised in accordance with the conditions that have been developed in order to achieve the objectives are published every year in April. The latest communiqué on the support of individual irrigation systems within the scope of rural development support has been published in the Official Gazette dated 29.04.2016 and numbered 29698. In the circular dated 2016/13; By spreading the use of agricultural individual irrigation systems by farmers; The principles and procedures regarding the production of better quality and suitable to market demands and the support of individual irrigation systems in order to increase the income level of rural farmers. According to the 2016/13 communiqué, the project of supporting irrigation systems is carried out by the General Directorate of Agricultural Reform (TRGM) Department of Land Reclamation and Irrigation Systems. Supporting topics;

a) Establishment of in-field drip irrigation system,

b) Establishment of in-field sprinkler irrigation system,

c) Establishment of in-field micro-irrigation system,

d) Purchasing linear system, Center Pivot system or Drum system irrigation watering machine,

e) Establishment of a solar-powered irrigation system.

2.2. Studies in the Context of Supporting Purchase of Individual Irrigation Machinery and Equipment

The main purpose of the project is to promote farmers' use of modern irrigation machinery and equipment developed for agricultural activities. Other objectives are to prevent excessive use of production inputs such as irrigation water, energy and fertilizer, to protect soil and water resources in terms of quality and quantity, to increase quality and productivity in production and to reduce the need for labor.

Based on the decision of the Council of Ministers on the Support of Individual Irrigation Machinery and Equipment under the Rural Development Investment Support Program, the 2006-2010 Paper on Agriculture Strategy and the Support for Rural Development Investments on 81 December. Supports started in 16 pilot countries with the World Bank loan in 2006, then spread to 81 provinces, financed entirely from country sources.

Promotes; applicants are separately provided for real persons and legal entities, according to the amount of Basic Purchase Amount (50%) specified in the Grant Scheme. By the end of 2016, about 958 thousand decares of modern irrigation methods have been installed in the scope of the support. 261149 tools-equipment and 8896 in-field irrigation equipment were supported by GTHB in the period covering 2007-2013. In the period 2005-2014, 630 pressurized irrigation systems were supported (Table 1). Within the scope of the program to support rural development investments, until the end of 2016, a grant of 288,46 million TL was provided to a total of 13,537 projects and about 1,221,586 decares of pressure irrigation systems were installed in the field [8]. In 2016, 9526 irrigation projects were supported and 841,874 decares of irrigation systems were installed in the field (Table 2).

Table 1. Rural development investment support program general situation [8]

		Number	Grant (TL)
2007-2013 Machine equipment support	Instrument equipment	261.149	993.161.940
	In-field irrigation	8.896	128.018.907
Total		270.045	1.121.180.847
2005-2014 Completed economic investments	Economic investments	4.931	1.092.682.056
	T.Pressurized irrigation	630	98.951.953
Total		5.561	1.191.634.009
Total grant paid to supported projects			2.312.814.056

Table 2. Irrigation supports [8]

	Number of projects	Grant (TL)	Area (da)	Number of producers
In-field irrigation (machine equipment)	8.896	128.018.907	560.649	8.896
T.Basic irrigation (economic investments)	630	98.951.562	281.225	55.653
Total	9.526	226.970.469	841.874	64.549

2.3. Supports Provided to Collective Pressurized Irrigation Projects

Collective-pressurized irrigation systems can be defined as irrigation systems that serve a large number of agricultural operations using the same water source and that convey irrigation water under certain pressure from the source to the hydrants. The support of collective pressure systems, which started in 2006, ended in 2011. The support of collective pressure systems, which started in 2006 in our country, ended in 2011. Promotes; the existing irrigation facilities constructed by public institutions were converted into pressurized irrigation facilities, and the public pressure irrigation projects. Project proposals include water distribution and conveyance lines to be made from water source to the field for collective pressure irrigation facilities, construction of necessary art structures and purchases of goods to be made under construction works [9].

Between 2006 and 2011, 98.718.000 TL was provided to 629 projects (300 drip irrigation project, 239 irrigation project, 90 infrastructure) within the scope of collective pressurized irrigation projects throughout the country (Table 3).

Table 3. Collective pressurized irrigation schemes with grant support payment in Turkey [10].

Years	Drip irrigation	Sprinkler irrigation	Total	Grant (Thousand TL)	Area (da)	Number of Farmers
2006-2008	181	150	331	26.192	7.306	21.383
infrastructure	-	-	90	8.499	0	0
2009	22	30	52	14.590	52.620	25.464
2010	37	27	64	18. 68	62.890	7.856
2011	60	32	92	30.569	76.420	900
TOTAL	**300**	**239**	**629**	**98.718**	**279.236**	**55.603**

3. Results and Recommendations

In the century we are in, water is seen as a resource with strategic importance. Depending on the growing population, the increase in demand for water in the sectors increases the pressure on the increasingly limited available water resources. Therefore, in agriculture, which is the most important sector dependent on water, water saving is required. Pressure irrigation systems that provide water saving in agriculture are not preferred by farmers because of their high cost. Taking this fact into consideration, the GTHB has been in the scope of supporting pressurized irrigation systems since 2006 and its coverage is being expanded and supported.

Support for pressurized irrigation systems has increased the irrigated areas in our country with pressurized irrigation systems. However, it is not yet sufficient. Grant and zero-interest credit support should be continued in terms of water saving and effective water use. The pressurized irrigation support system has positive aspects as well as some deficiencies. The support system is only a financial resource and are not given technical assistance and education to farmers. In addition to the application of modern irrigation methods for effective use of water, Irrigation system components such as pump unit, pipelines, drippers, sprinkler heads etc. must be selected in accordance with the conditions and projecting and installation and operation and maintenance services must be done on time.

The irrigation system is not followed by technical staff in terms of irrigation performance and agricultural performance. In this case, some problems in field level cannot be detected and therefore cannot be solved. Despite the implementation of the support system from 2006 until today, how many hectares have been irrigated, how many plants were grown in these areas, how much yield was obtained in the unit area, how much water usage or how much water usage was reduced with pressurized irrigation system, Cannot find an answer yet. Because the GTHB does not implement a monitoring assessment program to determine irrigation performance, agricultural and economic performance under support. In our country, where agriculture is given great importance and great support is given to irrigation; it is necessary to establish a monitoring and evaluation system for determining water use, agricultural and economic efficiency in irrigation systems. In the near future, with the great investment of pressure

irrigation systems, water saving will be achieved in agriculture and water usage will be reduced to the target level.

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