Available online at www.sciencedirect.com

ScienceDirect

Agriculture and Agricultural Science Procedia 4 (2015) 126 – 132

Agriculture and Agricultural Science Procedia

IRLA2014. The Effects of Irrigation and Drainage on Rural and Urban Landscapes, Patras, Greece

The effects of tillage on soil water content in dry areas

Meryem Kuzucu[a] and Funda Dökmen[b*]

[a]Pistachio Research Station Directorate, Gaziantep, TÜRKİYE.

[b]University of Kocaeli, Vocational School of Food & Agricultural , Campus of Arslanbey, 41285 Arslanbey-Kartepe, Kocaeli, TÜRKİYE.

Abstract

Annual rainfall is less than 500 mm of rainfall in the dry farming regions in order to be stored in the soil processing. At the time, and is provided with a sufficient number of the version of weed control, leveling a good soil is obtained, the temperature of the soil evaporation will be blocked, and capillarity corruption prevented erosion. Some dry land farming areas is 7-8 times a year. As a result of the false and incorrect versions of the soil organic matter content decreases, due to the heavy traffic and rainfall feeds into and hardens. Also, the more time the soil impermeable layer consists of the processing of terrain plow deep, it's broken, you need to increase water permeability changes in the ground. Our country's (Türkiye) Southeastern Anatolia region, especially during the period of erroneous releases summer soil cultivation of pistachios to crack and evaporate the water accumulated in the profile. In this region, the soil is less to prevent evaporation and mulch practices are required to do. Usually in the winter and spring to gain ground in both the water and the soil is completely dry in order to struggle for and type weeds, cracks and prevent evaporation of water to close the land sliding. In our region the soil structure and the orchards slope, vegetation, depending on the year, to a loss of between 40-100 tons per hectare. Soil processing by lose ground is important for quantities of soil and water losses in every year. The importance of the land in agricultural production processing topics, manufacturers, increases productivity with timely and accurate processing of applications on soil. In addition to the increase in the efficiency of handling soil erosion by the soil protection and control of soil water contents are benefits such as to conservation. In this study, tillage, reduced tillage in dry farming areas, mulching and soil moisture content will rely upon.

Peer-review under responsibility of Data Research and Consulting

Keywords: Drought; evaporation; semi-arid area; soil moisture; water management

1. Introduction

Tillage is one of the fundamental practices of agricultural management. It is the procedure by which man disturbs, overturns and rearranges the soil to create favorable soil physical conditions for crop growth. The tillage operation loosens, granulate, crush, and even compact the soil practices. Any tillage operation that changes soil bulk

* Corresponding author Tel:+90-262-3514053; Fax: +90 262 3514038 E-mail address: f_dokmen@hotmail.com & fun@kocaeli.edu.tr

Peer-review under responsibility of Data Research and Consulting
doi:10.1016/j.aaspro.2015.03.015

density in turn modifies pore size distribution, water holding capacity, infiltration rate, and soil and water erosion. Tillage system desirable in one of location may be a complete failure in another location (Khan et al., 1999). Braunack et al., 1971, Heard et al., 1988 and Unger et al., 1991 were studied impact of different tillage practices and the effects of tillage on soil water content.

Agricultural production in the arid and semi-arid areas of Türkiye is highly dependent on rainfall because water for irrigation is scarce or farmers cannot afford the technology. In order to have successful rainfed crop production in these areas, rain water conservation is essential (Barron et. al., 2003). The success of on-fram soil water conservation however depends upon many soil factors such as soil bulk density, porosity, soil surface sealing and crusting, surface roughness, hardpans, hydraulic conductivity, and infiltration rates as they determine the hydrological properties of soil (Strudley et al., 2008). Soil water conservation through is widely accepted as one of the appropriate ways of addressing soil moisture constraints in rainfed agriculture (Miriti, 2013) Soil surface ruoughness can however change considerably with rain, wind and soil cultivation events (Guzha, 2004).

2. Tillage in Southeastern of Türkiye

At the beginning of our country's most important agricultural problem comes from water erosion. Using digital satellite data in our country lately arid regions that are important for the development of new methods and thus contributed to the use of the land is suitable for the purpose. All that humanity's future food supply and protect against soil erosion depends on the usage and attentive. In different regions of Turkey in studies related to soil erosion, erosion were quite high on the size of the tolerance value. Which is a very important issue of agriculture on soil erosion is not found in a study in Gaziantep enough. This works together with the prevention of erosion of local farmers in seminars, in efficient land use and protected it is observed that a significant lack of information. Also informed farmers on erosion-menu with the lack of reported losses would have increased even more. Incorrect due to erosion caused by agricultural practices, soil nutrients and organic matter is lost.

Gaziantep, the Mediterranean region and at the confluence of Southeastern Anatolia, Syria, and a large portion of a neighboring border provinces in the western part of the Southeastern Anatolia Region, situated in the eastern part of the Mediterranean region. Approximately 52% of the surface area of the mountains, the plains, covers 27% (Anonymous, 2007). Agricultural practices in various ways in Gaziantep approximately 382,077 ha of land with 9,235 ha of it is left fallow, 85,040 ha pistachio and 20,911 ha olives are grown (Anonymous 2007). In Gaziantep various agricultural way restrict erosion, soil shallowness, stony, rocky and drainage disorders such problems are available and moderately eroded soils 243,440 hectares with 32.2% a ratio, very severe erosion of 26% at a rate of 196,589 hectares of land covers (Anonymous, 2007). This study explored that erosion of agricultural land and suggestions have been made in accordance with local farmers in Gaziantep (Fig. 1, 2, 3).

Soil erosion is sensitive to the importance of the soil structure is quite large. Silt and fine sand content in the soil, the higher, the greater is the potential credibility. Silt and sand contents of soil were high. As reported soil erosion rate sensitivity increases with sand and silt soil given that the erosion risk is present in the region investigated is evident. Results showed that physical and chemical analysis of soil, the value of this land is in high alkaline calcium content are very high and Nitrogen (N) is seen to be deficient. In addition, to increase the soil's water holding capacity, as well as holding both nutrients play an important role in aggregate stability is very low in organic matter clearly. In this way the use of climatic factors and soil, as well as stubble burning in these lands and use of organic fertilizers in the region plays a major role in the widespread absence. It also triggered soil erosion and soil fertility decline is caused. Calcium, magnesium, phosphate, and potassium contents of soil are observed to be higher.

In the same way, calcium and magnesium salts, clays combine with chemical chains have instituted and the condition of the clay mobility limiting plant nutrients storage block and clay silt to behave like that is why stated. We know that increasing the stability of the clay. However, in such a situation can not show this feature it is possible to see clearly. Organic matter of the soil was very low according to the examiner of field. Soil organic matter constitutes the majority of soil nitrogen reserve. Decomposition of organic matter by micro-organisms in the soil during which releases carbon dioxide causes accumulation of carbonic acid. Carbonic acid increases the solubility of the other elements. In the soil so that said mobility is a nutrient. Organic substances such as phosphorus and sulfur are also helpful uniform passage of elements also provides plants. The organic matter in the soil particularly in dry climates to improve certain physical properties of the soil as well as by improving the water retention capacity of the soil increases aggregate stability. These results, some measures should be taken to indicate that time is passing. These can be briefly listed as follows: Nitrogen deficiency as well as to reduce the organic