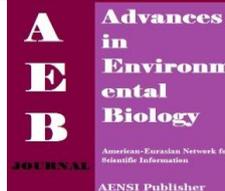




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## The Impact of Conservation of the Tillage and the Amount of Remaining Tasks on Aggregate Stability of Tomato Fields in North of Ahvaz City

<sup>1</sup>M. Jasem Nejad, <sup>2</sup>A.R. Jamshidi and <sup>3</sup>M. Mansouri far

<sup>1,2,3</sup>Department of Agricultural Mechanization, Collage of Agriculture, Shoushtar Branch, Islamic Azad University, Shoushtar, Iran.

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### ABSTRACT

In order to evaluate the impact of conservation of the tillage and extent of remaining tasks on characteristics of the soil, an experiment was conducted from the type of a split plot in a complete block design of randomized with 3 replications. Treatments included tillage main plots at rates of 1 - conventional tillage 2 - of the tillage bar 3 - reduced tillage 4 - no of the tillage, and remaining amount tasks as a subplot in four levels: no remaining tasks, 30 percent, 60 percent and 90 percent, was covered by remaining tasks. Of the tillage treatments included 1 - conventional tillage (tillage with the plow on the disk of surface+ Moldboard) 2 - strip tillage (chisel plow use) 3 - min tillage (Soil sports of complex includes a chisel + disk + drum machine equipped with a motion) 4- no tillage. The results showed that the maximum soil bulk density owned for having no tillage and ninety percent of the remaining tasks and the lowest soil bulk density were owned conventional tillage and no remaining tasks. The maximum average weighted- the diameter of soil of the tillage is for having no tillage and ninety percent of the remaining tasks and the lowest weighted average - the diameter of the Aggregate is from conventional tillage and no remaining tasks.

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## INTRODUCTION

Aggregate stability in this experiment was affected by tillage and remains. In any of leftover tillage increases soil aggregate stability was increased. Management of the tillage methods on some soil properties has been influenced. Soil organic matter by sticking sand, silt and clay together, helps the soil aggregate to the formation of soil. Organic matter acts like a stick that helps to be firm and stability of the soil and the result of this acting is a granulated structure with pore and the larger hole between soil grains. Chaji et al., have evaluated the various methods of influence of the tillage and mentioned that From 30 to 0 cm deep in subs oiler using moldboard treatments created most treatments once Furrower without subs oiler plow with minimal loss of soil cone index.

ESLIVINISKA (1994) examined the Effect of tillage on soil physical properties, and concluded that the use of tillage causes a change to soil structure through crushing aggregate, the changes in the structure or size of the pores and the arrangement of soil particles all of these changes can cause changes in other features of the soil. Despite the limited Research carried out on different tillage methods, the research will be done in this regard. Also, farmers do not have sufficient knowledge of conservation tillage practices and destroy the amount of crop residue of last product by burning and On the other hand agricultural lands are being destroyed. Implementing a project on impact of conservation tillage on soil properties and the amount of remaining tasks to provide the most appropriate tillage systems according to area farmers is necessary.

## MATERIALS AND METHODS

The purpose of this study was to evaluate the effect of tillage methods on soil properties and the amount of remaining tasks of tomato farms in the northern city of Ahvaz. This experiment was implemented in an area of 1000 square meters split plot in a randomized complete block design with three replications. Plots were with an area of 45 square meters in size 15 × 3 meters. Each plot consisted of four rows with a row spacing of 50 cm. The distance between the main plots in each replicate 5/0 m and 2 m intervals between repetitions were considered. Treatments of experiment included tillage as the main factor at four levels: 1 - conventional tillage 2

**Corresponding Author:** A.R. Jamshidi: Department of Agricultural Mechanization, Collage of Agriculture, Shoushtar Branch, Islamic Azad University, Shoushtar, Iran.

- Tillage bar 3 - reduced tillage 4 - no tillage, and the amount of remaining tasks as a subplot in four levels: no remaining tasks, 30 percent, 60 percent and 90 percent coverage by the remaining tasks.

Tillage treatments included 1 - conventional tillage (tillage plow + disc level) 2 - strip tillage (chisel plow use) 3 - reduced tillage (chisel + disk Soil kneading complex including a device with a roller + move) 4 - no tillage.

Measuring of the amount and percentage of covering remains is done before tillage. Percentage of covering remains before tillage will be determined using the sampled frames in a square with multiple points in the field and by weighing them. Therefore, treatments that needs to increase or decrease the vestigial remains to be done in a way that covered 30, 60 and 90% remains to be provided [1].

The aggregate size distribution and aggregate stability in both dry sieving and wet sieving will be measured. The dry sieving soil samples through a series of rotating sieve sizes 0/1, 5/0, 25/0 and 053/0 mm are crossed. The percent of measuring the weight of each component and the aggregate size distribution is expressed. The wet sieving the soil samples from the series are passed through a sieve above. Before sifting the water, in order to prevent loss and damage stimulates aggregate confining the air; the specimens will be wet spray. Then the percentage of the weight of the aggregate size distribution measurements will be described. Finally, aggregate stability in terms of mean weight diameter (MWD) of soil aggregates, respectively, will be calculated as follows:

$$MWD = \frac{\sum_{i=1}^n X_i W_i}{\sum_{i=1}^n W_i}$$

That MWD millimeters,  $X_i$  (s) remaining on each sieve diameter in millimeters  $W_i$  dry aggregate in each sieve based on the total weight of the soil is warm. Larger values represent a weighted average geometric diameter is more stable soil structure [6].

For measuring soil bulk density at three depths: 5-0, 10-5 and 20-10 cm were sampled at harvest time. Samples for 24 h at 105 ° C were kept in an oven and then samples weighed and Dry weight is calculated using the following equation [6].

$$P = \frac{M}{V}$$

P: bulk density per cubic meter of Mg

M: weight of soil samples based on Mg

V: volume of soil per cubic meter

Data analysis was performed with SAS software. After recording taken from the samples, analysis of variance and means were compared by Duncan test at 5% probability level was used. Plot a Graph of was performed using Excel software.

## RESULTS AND DISCUSSION

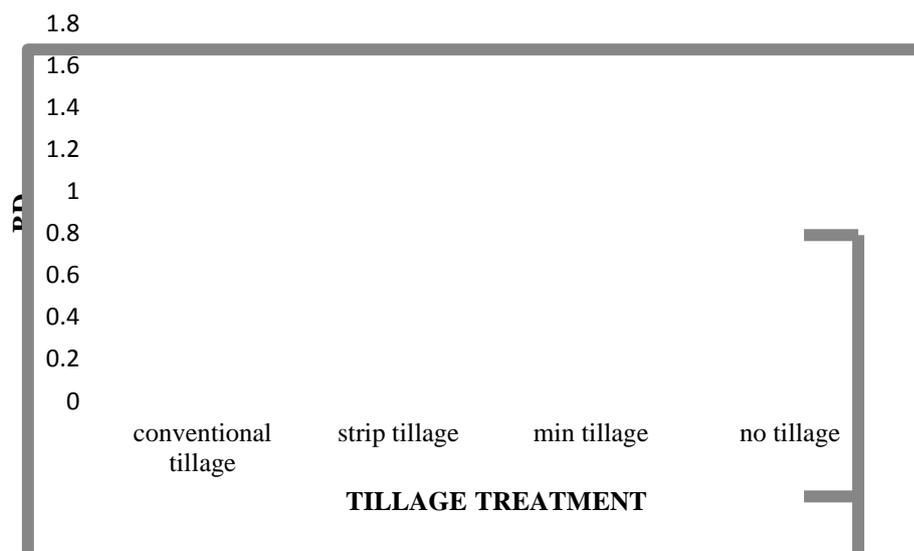
Tillage levels and their interaction remains significant effect on the bulk density of the soil. Comparison suggests that the proportion of tillage to no tillage and reduced tillage reduces soil bulk density.

The highest soil bulk density with an average of 623/1 gram per cubic centimeter of soil belong to no tillage and lowest 258/1 gram per cubic centimeter of soil from conventional tillage, respectively.

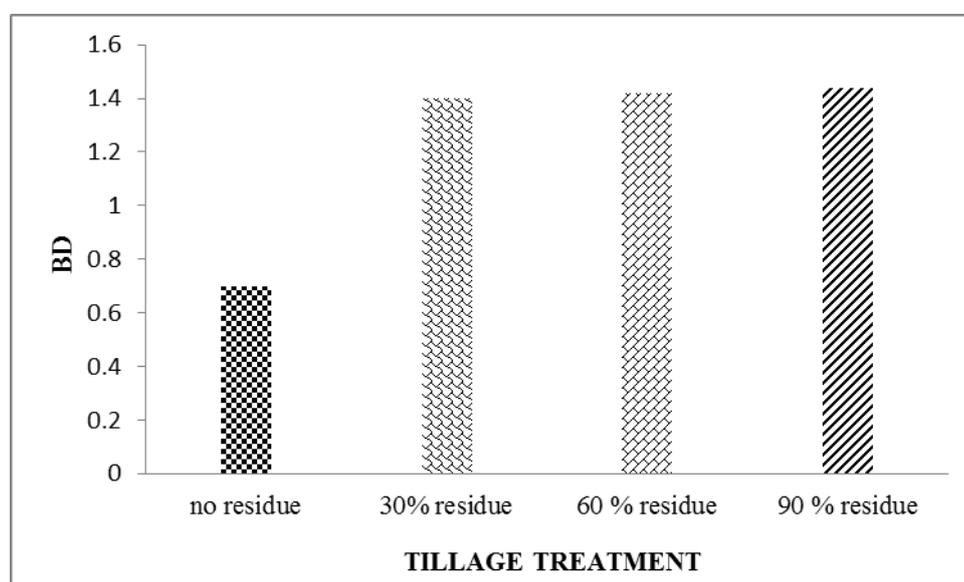
Between reduced tillage and strip tillage had no significant difference (Fig 1). The results of experiment showed that the treatments used to control devices tillage in reducing soil bulk density at a rate of 5/6% compared to no tillage.

Reducing soil bulk density was similar in plowed treatments that represent different impact on reducing tillage equipment, soil bulk density. How to use tillage systems on soil bulk density was affected. How old test results on three different soil types or tissues in America showed that the treatments had been killed during this period, they increased the bulk density of the soil pores to decrease image .

Affect the amount that remains on the soil bulk density, soil bulk density was increased, leaving remnants. The highest soil bulk density with an average of 456/1 gram per cubic centimeter of soil remains 90% owned and lowest 344/1 gram per cubic centimeter of soil from conventional tillage (Figure 4-2).



**Fig. 1:** Effect of tillage on soil bulk density (05/0 =  $\alpha$ )



**Fig. 2:** The effect of the coating remains on the soil bulk density Aggregate stability affected by tillage and remains of them

Tillage rate remains significant effect on soil structural stability and interaction of tillage and remains level on aggregate stability was significant.

Comparison showed that the methods of tillage and minimum protection mean weight - diameter (MWD) of 659/0 mm treated with conventional tillage, respectively, 334/1 and 553/1 mm increase, and these increases compared with conventional tillage treatments were significant (Fig. 3).

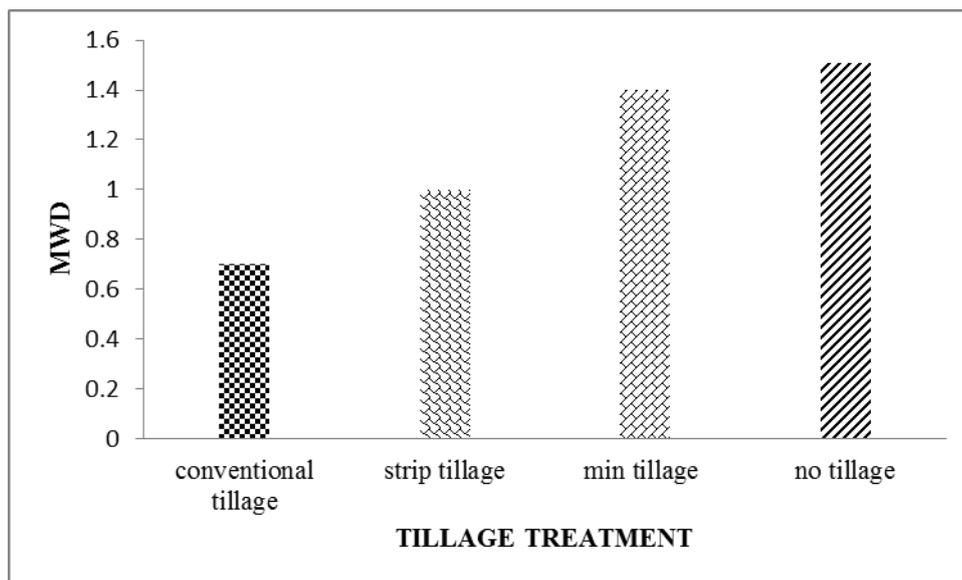
It also increases the weighted average increase in plant residues - and thus aggregate stability in diameter so that the 981/0 mm in treatments without residue to 224/1 mm in treatment survival increased by 90% (Fig. 4) due maintain or increase soil organic matter can be considered in conservation tillage methods.

Due to the increased organic matter in the least, and conservation tillage methods may be too poor soil, no burning of crop residue on the soil surface as well as storage. HUNCE and RIGHT (2005) also reported that no-tillage methods significantly increased the aggregate level, the amount of organic carbon and organic nitrogen in surface soil.

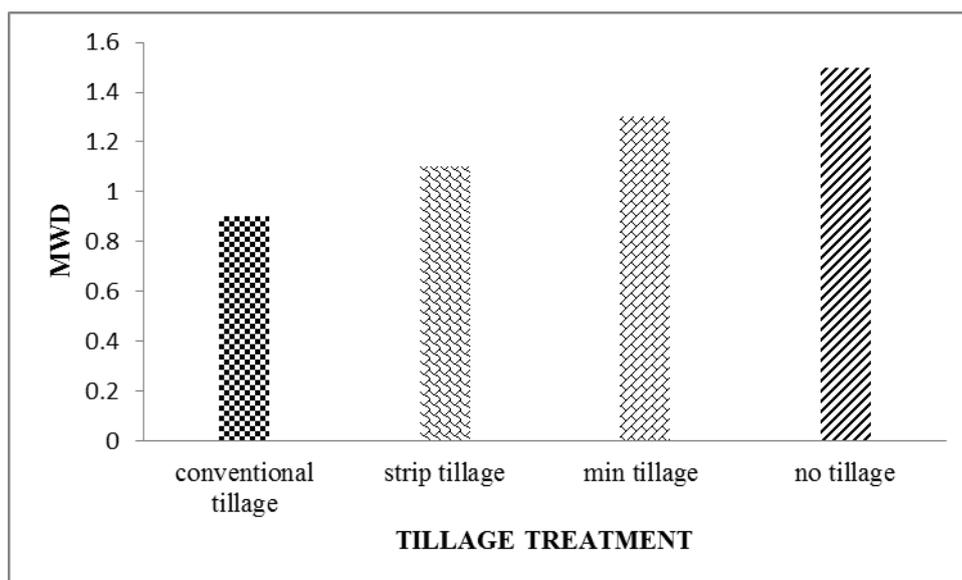
Research on DICK [4] and BEER *et al.*, [2] using conventional tillage, the soil disruption causes more rapid decomposition of plant residues and carbon and nitrogen in organic matter mineralization faster and faster as a result of organic material lost River.

In all the theories presented on aggregate formation, organic matter and aggregate stability plays a major role in the formation and Due to the dynamics of organic matter in soil formation and stability of aggregates is

dynamic, So that the entry of organic matter to the soil formation and stability of aggregates increases and Reducing the amount of organic matter formation and aggregate stability decreases.



**Fig. 3:** Effect of tillage methods on a weighted average - diameter ( $05/0 = \alpha$ )



**Fig. 4:** The effect of coating on the weighted average remaining tasks - diameter Numbers with the same letters indicate no significant differences based on DUNCAN test.

#### Conclusions:

Tillage rate remains significant effect on soil structural stability and interaction of tillage and remains level on aggregate stability was significant. Aggregate stability in this experiment was affected by tillage and remains. In any of leftover tillage increases soil aggregate stability was increased. So that the least stability belongs to conventional tillage and it is without the remains and maximum stability belong to conventional tillage and no tillage of treatments and 90 percent owned by the stability of the rest. Also, an increase in any of leftover tillage will increase aggregate stability. Thus the effect of tillage methods on soil properties such as bulk density, and vestigial amount of soil that remains increased in all tillage operations increases the bulk density of the soil. The difference between the effects remains no tillage treatments on soil bulk density were more evident. The results showed that different methods of plowing through its effect on physical properties and organic matter in the soil maintain soil organic matter and improve the building.

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