



EFFECT OF CONSERVATIVE TILLAGE AND TYPES OF RICE ON FIELD MANAGEMENT AND WHEAT OPERATION TO STABLE AGRICULTURE

***Dibaei, M.H., Mehdizadeh Koozari, M., Ghorbani Birgani, M. and Meisam Boroun**

Department of Agriculture Mechanization, Member of Club of Young Researchers, Islamic Azad University, Shoushtar Branch, Iran

ARTICLE INFO

Article History:

Received 7th March, 2011
Received in revised form
9th May, 2011
Accepted 18th June, 2011
Published online 5th August, 2011

Key words:

Conservation tillage,
Conventional tillage,
Soil physical properties,
Wheat and rice.

ABSTRACT

Considering the existence of rice and wheat rotation on 50 thousand hectares of Khuzestan province and the necessity of efficient use of soil, crop year study period (1389-1388) in the city were examined Shoushtar. This research project as chopped blocks in a randomized complete block with three replications was carried out. The first factor in this plan tillage methods that include: T1) moldboard plow disk light (TOF region), T2) disc-style chisel plow, T3) heavy disk Rotator and T4) in two perpendicular heavy disk load time. The second factor consists of rice, including high yielding varieties (LD183) and local varieties (Champa), respectively. Results indicated that tillage method and type of significant effect on the number of green plants per square meter, but no tillage methods significant effect on the capacity of a farm is effective. Also, tillage methods on the number and type of soil bulk density, aggregate mean weight diameter, the translation of the soil, grain yield and harvest index had a significant effect. Finally, treatment 4 (two discs of heavy vertical time) with the performance of 5,140 kg per hectare, appropriate size hunk of dirt, with return to 50 percent soil and time is better than other treatments.

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INTRODUCTION

The need of human to foods and particularly corps is very vital. Paying attention to the point that Khuzestan state has a potential to farm twice a year; also wheat and rice farming in fall and summer, respectively, farming the corps has been important. Wheat and rice are farmed together through 50 hectares all over Khuzestan state. It is important to know farming rice is doing watery kind so soil accomplishment would be happened in a 0-15 cm layer that wheat root is there. Understanding the limited time of land preparing due to rice harvesting with wheat farming, it is impossible to farm in an appointed time with tillage operation completely. Also increasing optimizing and soil humidity conservating to prevent soil structure destruction should be considered. Rice remaining in the land is burnt and this causes to die microorganisms and serious injuries to the land. Covering this remaining materials using tillage methods has benefits moreover decreasing operation time (9). In a test in Ghamloo station in Kurdistan state on the effects of covering soil with weeds it was resulted that under soil and fraction timour has the highest permeability of 18.57 cm in 110 min and under soil timour with 15.95 in 110 min while burning remaining timour with 7.03 cm in 110 min has the lowest permeability (4). Tillage operation affect on the main properties of soil such as:

temperature, storing and scattering humidity in soil (12). Therefore to consider the influence of tillage methods studying relevant of some properties of soil, growth and product of soil done.

MATERIALS AND METHODS

This research was done in Main Ab zone of Shushtar city with an arid-semi arid weather. At first for recognizing physical properties and finding suitable conditions to performing tillage, soil tissue was considered. It was clay-silt. Statistical samples included fractured cert in blocked fames with 3 times reputations.

The main cert includes tillage methods as the below:

- T1: light disk
- T2: light disk
- T3: heavy disk+ rotator
- T4: twice heavy perpendicular disks

To do this research, after doing the plan, two kinds of rice were farmed from Jun. 2009. All of farming operations were done in rice farming adapting to common one in the zone. After rice harvesting in middle of Nov. 2009, the operation was done in a land with 2925 square meters in terms of difference between kinds of remaining and tillage methods; so

the test cert were divided in 10*20 meters and four cert in a length route. At first, the land was divided to six parts while using the plan map, locations of two kinds of rice were appointed. After rice harvesting width bands including remaining of two kinds were fixed and four methods of tillage were done. To start the operations, first the machines of tillage were brought to the land, and width, length and depth settings were presented, then the depth of machines penetration was set. The land preparing was finished in 30/12/2009 that sampling of soil was done. Thus fertilizer formulating with NPK (Urah – Phosphate – Potas) was used. The final and pre final passes were not done because of raining and suitable humidity. Chemical poisons were not used why weeds suitably and little growth of them in rice farming. After consideration of wheat, necessary samples were collected for recognizing the index properties and seed operation per square meter in the land. Also sampling was done in 30/5/2010 and harvesting the land surface was done by Jandir combine 955.

1- Appearant special mass of soil

This mass is calculated by:

$$\rho = \frac{M}{V} \times 100 \tag{1}$$

Where ρ , M and V are density, mass and volume, respectively.

2- Average of weight diameter of grain soil

To measure the average of weight diameter of grain soil, we used lab separators. The number of the separators was 5 and were set on each other in terms of penetration holes of them. After doing each timour in every cert, some points were selected and samples of soil lifted were set by standard separators. The property of size of grain soils is calculated by:

$$MWD = \sum_{i=1}^n \frac{W_i}{W} \times D_i \tag{2}$$

Where MWD, W, W_i and D_i are average of weight diameter of grain soils, weight of total fractured soil in each sample (kg), weight of defracted soil in the case separators and average diameter of the case grid (mm), respectively. Also average of weight diameter of grain soils could be calculated by:

$$MWD = \sum \frac{1}{W} \times (5A + 15B + 25C + \dots + NH) \tag{3}$$

Where MWD, W, (A, B,...) and N are average of weight diameter of grain soils, total weight of sample, weights of sample soil passed from separators and average diameter of grains in upper separator (cm), respectively.

3- Converting the soil

$$F = \frac{w_a - w_b}{w_a} \times 100 \tag{4}$$

Where w_a and w_b are dry weight of remaining plus herbicides before and after the operation.

4- Number of established roots per square meter

The number of established roots is calculated by:

$$M = \frac{PPSM}{(SPSM)(P)(G)} \tag{5}$$

Where PPSM, SPSM, P and G are number of established roots per square meter, number of farmed seeds per square meter, percentage of seeds purity and naming power, respectively.

5- Seed operation

After cancelling cert margin, three random points in a 100*100 (cm) fame were appointed, so harvesting and recognizing the weight of seed were done. Then seed operation was appointed in humidity of 14%.

6- Total time of working

To appoint total time of each method to prepare the land, sum of useful and machine rotating at first and end of the field farming in a suitable speed were measured by a time meter separately.

DISCUSSION AND CONCLUSION

The required calculations were done after collecting data, so the results were demonstrated in tables and diagrams as the below.

Table 1. Analyse of mean variance of square the properties evaluating concisely

harvest index	seed operation	no. of green roots	converting of soil	average of grain seeds diameter	apparent special mass of soil	degree of freedom	Var resources
91Y	11V1P0Y	YF0L0	11V9F4	111T	111F	2	Reputation
P005*	*6.2221A	02PAP1A	*A11P	**2F11Y	0211P	3	tillage method
221A	2AA21F0	2021A	9P1P	110T	111F	6	test error
0211P	22PAP10*	02P110F	*211P	0211Y	02110P	1	type of rice
1105*	*02F0T	1101Y0E	*91A20	112P02	0211FA	3	opposite effect
112F	22AV21Y	Y82P4	2110	111Y	1111	8	test error
1101	111F	1120	Y0F	Y10	912		(1) Var factor

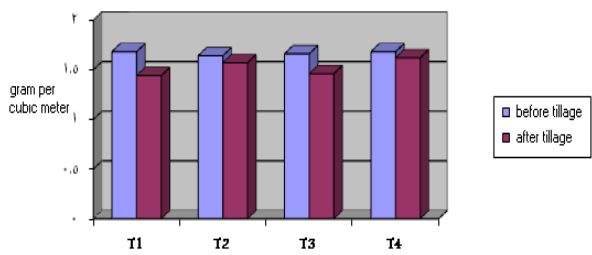


Fig 1. Mass of special appearance of soil

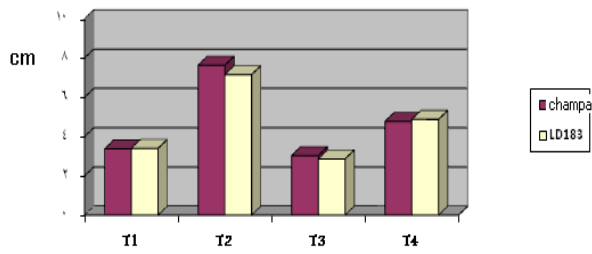


Fig 2. Mean of weight diameter of clays

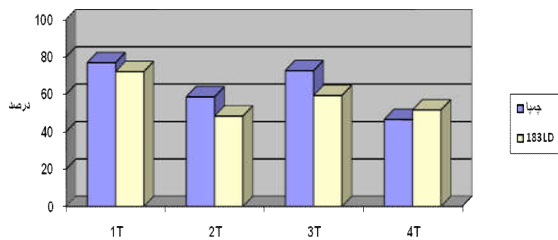


Fig 3. Converting value of soil

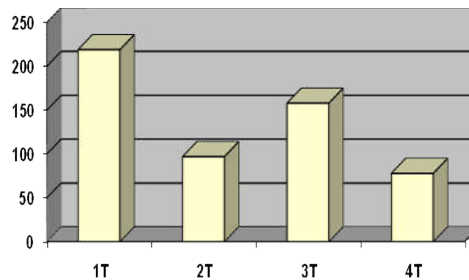


Fig 7. Time duration of working

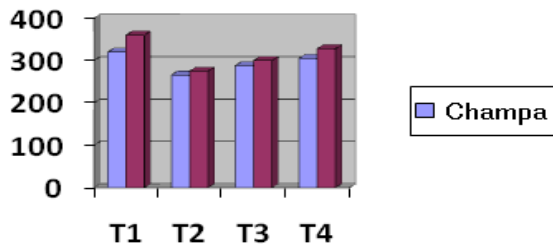


Fig 4. Number of green roots

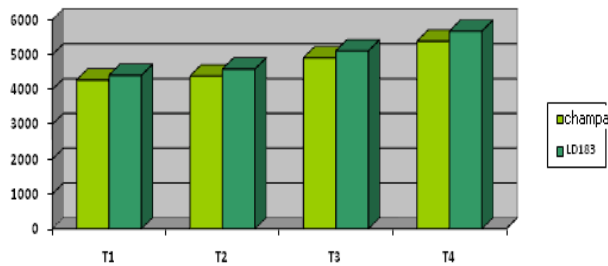


Fig 5. Operation of seed

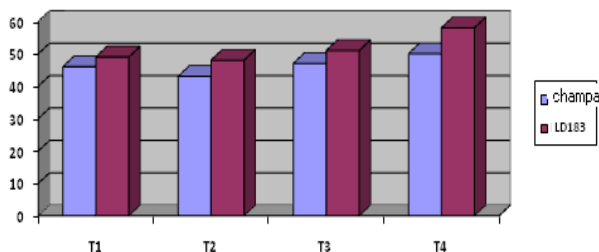


Fig 6. Index of harvesting

The results show that the tillage methods have a meaningful effect on value of fracturing the masses of soil. We can say that the timour T4 is the most useful method among the expressed ones why having a suitable situation in fracturing masses and so the corp operation with time would be optimized.

Acknowledgement

It is the best place to thank Young Researchers Club at Islamic Azad University, Shoushtar Branch in Iran, particularly, Dr S M Mosaddad, the head to encourage us to do researching.

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