Effect of some agricultural residues on the characteristics of growth and yield of the onion bulb (Allium cepa L.)

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Abstract
The study was conducted at the primary school farm in Rabbah zone during in 2016/2017 season, To evaluate the contribution of farm residues (palm leaves, Peanut Peels, cooked tea leaves) in vegetative growth and the bulb onion in addition to the total yield of onion plants.

An investigation was a randomized complete block design in three replications. The obtained results of experiment showed that:
- Application of fertilizer by cooked tea leaves were significantly better in of the studied characters (plants height and Leaves Area) with rate increased to 47.15% and 93.4% respectively, than control treatment. Followed by T1 and then T3.
- Peanut Peels treatment gave the largest number of tubular blades in the plant (12.33), the diameter of the bulb neck (13.84mm) and bulb length (7.5cm) than other treatments. Followed by T2 and then T3.
- cooked tea leaves plants gave highest diameter of bulb(5.42cm), highest bulb weight(66g) and yield(20.85 t/ha) in the season. Where achieving with T3(18.35 t/ha) significantly increase in the yield total in comparison with other treatments.

Keywords: Onion, Farm Residues, vegetative growth and yield.

INTRODUCTION

The large expansion of agriculture increased the accumulation of waste of cultivated crops, which cause environmental problems.

The Souf region is one of the most important areas of the greens production (tomatoes and potatoes), addition to peanuts and the date palm cultivation, where is the production respectively in the year 2016 to (1785, 11180, 304) Thousand quinatals. In the year 2016, the palms number is 3704300 palms and the production of dates is about 2533.1 Thousand quintals (DPSB, 2017). Also, the region is characterized by the high consumption of green tea.

The agricultural activity leaves many quantities of waste that are destined to burn or accumulate in the soil, making it the seat of the insects and … as well as the plastic bags. causing environmental destruction.

The Agriculture Clean and Health aims to increase crops Environmentally friendly with developing the physico-chemical soil characteristics using organic residues as a fertilizer. The fertilizers differ in the decomposition speed, the chemical composition and availability of plant nutrients (NOGB, 1995).

One is important horticulture crops in the worlds, however in Algeria, economically and medically (ARBAB., 2015). (Shrestha, 2007). The Onion bulb contains high nutrient and medical composition proportions (antioxidants) such as and . Using the organic fertilizers (animal and plant remnants) is not harmful to humans and the environment. environments protection is one of the most important researches filed. In this context, this study aims to studding the remnants plant effect on the growth and yield of onion plant (Allium cepa L.).

MATERIALS & METHODS

The experiment was conducted out in Rabbah in El Oued city (33°16′47″N, 6°54′55″E, 87m altitude). The experiment was carried on a Randomized Complete Block Design (RCBD). The experiment consisted of four treatments of manure (T0:control, T1: Palm waste, T2: Peanut Peels, T3:Post-cooked tea leaves) with three replications at a spacing of 50 cm between blocks and treatments, respectively. Homogenous seedlings. The distance between seedlings was 15 cm.

Observations were taken from 4 randomly selected plants from each sub-treatment to measure vegetative and reproductive traits on growing and yield traits for the plants (Allium cepa L.) on local var. the following: (the leaves area, the plants height, the stems number, mean bulb weight, the yield, diameter bulb and bulb length). The statistical analysis of variations ANOVA was made to determine the significance between the averages; it was compared by the use of LSD with 0.05 probability level.

The plants height

Generally, the plant growth is expressed by leaves and stems characteristics. The result indicates the onion plants length is depended by the type of fertilizer (figure-1). Plant height has significant difference in both Peanut peels, post-cooked tea leaves and palm waste compared with the control, 80 days after transplantation. where Post-cooked tea leaves treatment gave a highest height (43.17 cm) than followed by the peanut peel (42.17 cm) then the Palm waste treatment (30.53 cm).

The leaves area

The field experiment results (figure-2) of different treatments showed a difference in the leaf area and its rate growth during 80 days after planting seedlings process. The treatments T1 and T2 showed significant variation in the leaf area when compared to respective control treatment. There was also no significant difference compared T3 treatment. This finding is in accordance with observation Alam et al. (2007). that the vermicompost and chemical fertilizers has increased vegetative characteristics of the potato plant. Ghemam et al sensoussi (2013) have reported that using organic manures increase the rate growth. As well as the results of both sun et al (2009) and Gebye et al khalaygy (2011).

RESULTS ET DISCUSSIONS

The number tubular blades / plant

The results set -3 of showed a difference in the number tubular blades in onion plant by different types of plant waste. The number of tubular blades in all treatments manures which was significant to respective control (T0). After 60 days the treatment T2 showed significant variation in the number of tubular blades compared to respective other all treatments, the number of tubular blades of the onion increased up to 12.33 blade/ plant (10.83, 10.92) in T2 and T3 Respectively, which was lower when compared to control treatment (T0) Despite the small number of tubular blades.

The diameter of bulb neck

The results shown in (figure-4) revealed that the exploitation of the various plant waste resulted in variation in the diameter of bulb neck in the onion plant.

The Results after 60 days of planting seedlings indicate a significant increase in the diameter of the bulb neck at T1 and T2 as compared with the control. Where the largest diameter of the bulb neck was recorded in T1 (13.48mm), also the results showed difference in the rate of increase diameter of the bulb neck between fertilizer treatments and control treatment. Where the highest increase observed was for diameter neck of the bulb in T1 (150.15) then it was followed by both the Palm waste treatment at (111.55%) then the peel peanut treatment at (90.89%).

Characteristics yield of the Onion bulb

Figure 5 shows a significant increase in T2 and T4 for all characteristics (bulb weight and total yield) compared to control with no significant increase for T1 and T3 weight. The results showed a significant increase in T2 and T4 for total productivity of onion bulb (kg). Where the percentage of bulb weight in fertilization treatments is estimated at 5.26, 3.05, 2.36% respectively compared to control treatment (T0). The palms number is 13.00 significantly increase for T1 and then T2 followed by T3.

CONCLUSIONS

This study concludes that the addition fertilizer plant residues improve the qualities of growth and production plant onions cooked tea leaves were the best one effect on the leaves area, the plants height, rate bulb weight and total yield

REFERENCES


