

An-Najah National University
Faculty of agriculture & Veterinary Medicine
Plant Production and Protection
“Using Yeast in Tomato Production.”

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Introduction

- Tomato considered one of the most important vegetables in Palestine, so there is many efforts to improve its yield and properties as producing new cultivares, to improve the surrounding environment and in our case using microorganisms.

- There is a claim that yeast improves the tomato growth and fruit coloring, so we tested this claim.
- Yeasts(fungi) are unicellular organisms which evolved from multicellular ancestors
- Which can act as one by forming pseudohyphae.

- To explore the potential relevance and practical application of rhizophagy (is a cyclic process whereby plants obtain nutrients from symbiotic organism that acquire soil nutrients in the free-living soil phase; nutrients are extracted from bacteria oxidatively in the intracellular endophytic phase).
- We investigated brewers' yeast (*Saccharomyces cerevisiae*), a waste product of the brewing industry, for its role as biofertilizer. The addition of yeast to fertilized soil substantially increased the nitrogen (N) and phosphorus (P) content of roots and shoots of tomato (*Solanum lycopersicum*). also increases the root-to-shoot ratio and greater shoot biomass in tomato plants. These findings support the notion that yeast improves plant vigor during the early growth phase.

Material and method:

A- Yeast

B- Water

C- 10 liters pail

D- 300ml cup



Method:

- 1- 32 tomato plants , planted in pots filled with local field soil
- 2- 16 treated with yeast 1g yeast/1 L water
- 3- 16 as control (add only water)
- 4- Yeast added 24 hours after fertigation (300ml added)
- 5- Full plant services (fertigation and spraying)
- 6- 2 time fertigation and 2 time yeast application



When complete of the cultivation process we harvested samples and took readings and weights:

1. Seedling weight
2. Seedling length

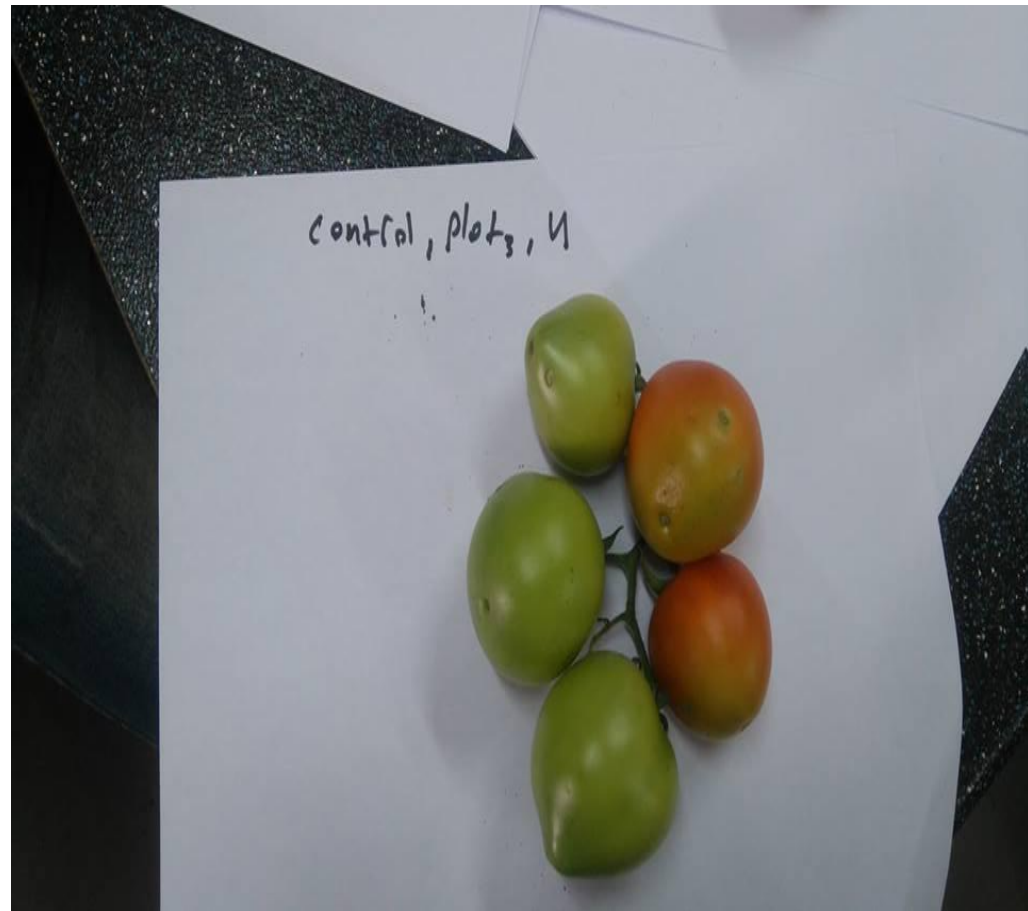


3 - Number of Leaves.

4- Number of nodes.

5 - weight of fruits

6- Number of fruits



Result

- Analysis of variance or the effect of Yeast on plant Weight.

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	5010.37633	5010.37633	1.50	0.2343
PLot	3	10629.09300	3543.03100	1.06	0.3873
Treatment*PLot	3	26559.69867	8853.23289	2.64	0.0746

- Analysis of variance or the effect of Yeast on fruits Weight .

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	3383.53200	3383.53200	1.00	0.3289
PLot	3	6259.95492	2086.65164	0.61	0.6127
Treatment*PLot	3	18906.81092	6302.27031	1.86	0.1664

- Analysis of variance or the effect of Yeast on plant Height.

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	8.8563333	8.8563333	0.08	0.7817
PLot	3	869.9246667	289.9748889	2.58	0.0797
Treatment*PLot	3	255.9953333	85.3317778	0.76	0.5296

- Analysis of variance or the effect of Yeast on plant Number of fruits

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	0.13333333	0.13333333	0.03	0.8695
PLot	3	6.95833333	2.31944444	0.48	0.6988
Treatment*PLot	3	3.49166667	1.16388889	0.24	0.8665

- Analysis of variance or the effect of Yeast on plant Number of Nodes .

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	26.13333333	26.13333333	3.88	0.0615
Plot	3	28.45833333	9.486111111	1.41	0.2667
Treatment*Plot	3	31.99166667	10.66388889	1.58	0.2216

- Analysis of variance or the effect of Yeast on plant Number of Leaves.

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	58.80000000	58.80000000	7.62	0.0114
PLot	3	70.05000000	23.35000000	3.02	0.0512
Treatment*PLot	3	36.11666667	12.03888889	1.56	0.2275

- Analysis of variance or the effect of Yeast on plant of Dry weight.

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Treatment	1	5.20833333	5.20833333	0.53	0.4740
PLot	3	30.72283333	10.24094444	1.04	0.3930
Treatment*PLot	3	17.44416667	5.81472222	0.59	0.6265

Treatment	PlantWt	Standard	H0:LSMEAN=0	H0:LSMean1=LSMean2
	LSMEAN	Error	Pr > t	Pr > t
0	268.746667	14.946478	<.0001	0.2343
1	294.593333	14.946478	<.0001	

Treatment	Fruitwt	Standard	H0:LSMEAN=0	H0:LSMean1=LSMean2
	LSMEAN	Error	Pr > t	Pr > t
0	163.073333	15.041964	<.0001	0.3289
1	184.313333	15.041964	<.0001	

Treatment	NoFruits	Standard Error	H0:LSMEAN=0	H0:LSMean1=LSMean2
	LSMEAN		Pr > t	Pr > t
0	3.6000000	0.56697852	<.0001	0.8695
1	3.7333333	0.56697852	<.0001	

Treatment	NoLeaves	Standard Error	H0:LSMEAN=0	H0:LSMean1=LSMean2
	LSMEAN		Pr > t	Pr > t
0	21.2000000	0.7173886	<.0001	0.0114
1	18.4000000	0.7173886	<.0001	

Conclusion

- There is quite effect especially in the early stages .
- Not all the clams are true .
- Despite of the diseases, the yeast showed positive effect.
- We recommend retesting, but in isolated environment to have better results.