Journal of Sohag Agriscience (JSAS) 2021, 6(1):74-80

ISSN 2357-0725
https://jsasj.journals.ekb.eg
JSAS 2021; 6(1): 74-80

Received: 15-03-2021
Accepted: 22-04-2021

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Yield, quality and storability of Onion as responsed to application of Potassium and micronutrients

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ABSTRACT

This study was conducted at the experimental farm of Shandawel Research Station, Agricultural Research Center (ARC), Sohag Governorate, during the two seasons of 2016/2017 and 2017/2018 to study the effect potassium fertilization rates (25, 50, 75 and 100 Kg K/fed.) and foliar spraying with micronutrients (foliar spraying after 30 days, after 30 and 45 days, and after 30, 45 and 60 days from transplanting), on growth, yield, quality and storability of onion. Application of potassium at rate of 100 kg/fed appeared the highest values of plant height at 90 days in the second season, and at 120 days in both seasons. The highest means of bulb diameter were obtained by K fertilizer application at rate of 100 kg/fed, while the lowest means were recorded by application of 25 kg K, at 90 and 120 days in both seasons. Application of 100 kg K/fed. appeared the highest means of total yield/fed. and exportable yield/fed., while application of 25 kg K/fed. appeared the lowest means, in both seasons. Application of K fertilizer at rate of 100 kg/fed appeared the highest means of dry matter% and TSS%, while using of 25 kg K/fed. recorded the lowest means, in both seasons. Spraying three times with micro nutrients appeared the highest means of average bulb weight, while spraying one time recorded the lowest means, in both seasons. The highest means of dry matter% and TSS % were obtained by spraying three times with micro elements, while the lowest means were recorded by spraying one time. The best combination between the two factors were achieved by application of 100 kg K/fed. and spraying three times with micronutrients, this combination produced the highest values of total yield/fed. and exportable yield/fed., in both seasons.

Keywords:
Onion – Potassium - Micronutrients.

INTRODUCTION

Onion (*Allium cepa, L.*) is one of the most important vegetable crops grown commercially in Egypt due to its multifarious use as local consumption, processing and exportation. Onion is widely cultivated in multifarious countries and considered one of the principal field crops grown in Egypt. Moreover, beside its importance for local consumption, it has great potentiality as export commodity to some European and Arabic markets. In Egypt, onion production was approximately 3.08 million tons produced from the harvested area of 87 948 ha, in 2019 (FAOSTAT, 2020). During the last three years, Egypt ranked fourth of the main onion exporters worldwide after the Netherlands, India and China (FAOSTAT,2019).

Increasing productivity of onion with good quality is an important target by the growers for local market and exportation (El-Bassiony, 2006). Onions are more susceptible to nutrient deficiencies than most crops plants because of their shallow and un branched root system; hence they require and often respond well to addition of fertilizers (Brewster, 1994). Potassium is an essential element for plant growth and reproduction. Usually, it has a major role in plant metabolism as it activates several enzymes in plant metabolism (Abd El-Al *et al.,* 2010). Potassium plays an important role in plant growth and development. It has a vital role in the energy status of the plant, translocation and storage of assimilates and maintenance of tissue water relation. Also potassium plays a key role of crop quality. It improves size of fruit and stimulates root growth. It is necessary for the translocation of sugars and formation of carbohydrates (Ghoname *et al.,* 2007). Potassium also provides resistance against pest and diseases and drought as well as frost stresses (Marschner, 1995). Many investigations reported several roles of potassium plant growth, yield and quality in onion. Mohamed *et al.* (1998) reported that application of K levels significantly increased the marketable yield, average weight of single bulb. Kumar *et al.* (2001) observed that the increase in potassium application significantly increased the dry weight of tops and bulbs, bulb diameter and bulb yield up to 40 kg K2O /ha.

Micronutrients are needed by the plants in minor quantities but they are very important for plants, as they used in different metabolic processes as well as cellular functions within the plants. Micronutrients play an active role in photosynthesis, chlorophyll formation, enzymes activity, nitrogen fixation etc. (Ballabh, 2013). Deficiency of micronutrients during the last three decades has grown in both, magnitude and extent. This has become a major constraint to production and productivity of vegetables in general and onion in particular (Biswas, 2020). Foliar application of micronutrients during active crop growth stage was successfully used for correcting their deficits and improving the mineral status of the plants. (Kolota and Osinska, 2001). Abd El-Mawgod *et al.* (2005) indicated that zinc has positive significant effect on yield. El-mansi and Sharf El-dien (2005) found that foliar spray with copper at 100 ppm increased dry weight of bulb and total dry weight /plant. Kamel (2001) reported that foliar application of boron and zinc significantly affected quality parameter of onion in terms of total soluble solid (TSS) and pyruvic acid content. Dry matter content in bulb was also significantly increased with the application of boron.

The aim of this study is to improve yield, quality and storability of onion bulbs by soil applying with potassium fertilization and foliar spraying with micronutrients.

MATERIALS AND METHODS

This investigation was conducted at the experimental farm of Shandawel Agricultural Research Station, Agricultural Research Center (ARC), during the two winter seasons of 2016/2017 and 2017/2018 to study the response of onion to different rates of mineral K fertilization and foliar spraying with chelated micro elements cocktail in respect to plant growth, yield and its components, quality and storability of onion bulbs. The soil of the experiment area was clay loam in texture. The land of the experiment was left uncultivated on the preceding summer in the two successive seasons. The mechanical and chemical analyses for the soil of the experimental sites (Table 1) were done according to the procedures described by Piper (1950) and Jackson (1967) at the Soil and Water Lab. of Agricultural Research Center (ARC).

The seeds in this experiment were sown in the nursery on 25 August and 3th September in the first and second seasons respectively, Nursery bed was prepared and planted with onion seeds cv. Giza 6 Mohassan. All the normal practices of onion nursery were applied as recommended. Seedlings were transplanted in 1st November in the two seasons. The experimental plot size was 10.5 m2, it consists of six ridges, 50 cm in wide and 3.5 m in length. Seedlings were planted 7 cm apart on both sides of ridge, ridging directions was north-south (NS). Nitrogen at rate of 120 Kg was added at two equal doses in the form of ammonium nitrate (33.5% N), the first dose was applied after thirty days from planting and the second, one month later. Super phosphate (15.5% P2O5) at rate of 45 Kg/fed. was applied during land preparation. Potassium sulfate was applied at two equal amounts; the first dose was applied one month after transplanting and the second dose added two months later. The other normal practices of onion were applied at the recommended level. The experimental design was split plot with three replications The main plots were devoted to rates of mineral potassium fertilizer, potassium treatments were adding of 25, 50, 75 and 100 Kg K/fed. While, the sub plots were devoted to the foliar spraying with chelated micronutrients compound (Table, 2), micronutrients treatments were foliar spraying after 30 days from transplanting, after 30 and 45 days from transplanting, and After 30, 45 and 60 days from planting.

Table (1): The mechanical and chemical analysis for the soil of the experimental sites.

Determination		Season	
		2016/2017	2017/2018
Mechanical	Textural class	Clay loam	Clay loam
Chemical analysis	pH	7.24	7.21
	EC (m mhos/cm)	1.09	0.98
	Organic	1.09	1.15
	Available N	16.00	16.05
	Available P	8.22	8.35
	Available K	246	232
Cations (meq/100g)	Ca	14.45	13.88
	Mg	6.55	6.48
	Na	3.83	3.63
	K	0.43	0.45
	HCO_3	5.40	5.58
	SO_4	10.02	9.85
	Cl	9.58	9.30
Available nutrients (ppm)	Fe	9.71	9.59
	Cu	0.42	0.39
	Zn	1.61	1.49
	Mn	0.97	0.97

RESULTS

Results presented in Table (1) and Fig. (1) Significant differences were observed in disease levels Amongst the 30 *Fusarium spp.* isolates, there were 18 pathogenic isolates resulting in 13.33–100 % percentage of infection compared with the control (0%), and 12 non- pathogenic isolates having no significant effect .Isolate No. 17 caused the highest percentage of infection (100%) followed by isolate 9(93.33%). Isolate 26 exhibited the lowest percentage of infection (13.33%). The other tested isolates were moderately virulent.

Table (1): Pathogenicity tests of *Fusarium Spp* isolates on Giza 6 onion cultivar under greenhouse conditions in 2017 / 2018 onion growing season.

Isolates	Fungi	Infection (%)
1	*Fusarium subglutinans*	0^{h*}
2	*Fusarium subglutinans*	0^{h}
3	*Fusarium proliferatum*	46.66^{bc}
4	*Fusarium oxysporum*	53.33^{b}
5	*Fusarium proliferatum*	26.66^{def}
6	*Fusarium verticillioides*	0^{h}
7	*Fusarium nygamai*	0^{h}
8	*Fusarium semitectum*	0^{h}
9	*Fusarium oxysporum*	93.33^{a}
10	*Fusarium oxysporum*	33.33^{cde}
11	*Fusarium oxysporum*	40.00^{bcd}
12	*Fusarium semitectum*	13.33^{fgh}
13	*Fusarium semitectum*	0^{h}
14	*Fusarium oxysporum*	26.66^{def}
15	*Fusarium oxysporum*	0^{h}
16	*Fusarium oxysporum*	26.66^{def}
17	*Fusarium oxysporum*	100^{a}
18	*Fusarium oxysporum*	26.66^{def}
19	*Fusarium oxysporum*	33.33^{cde}
20	*Fusarium chlamydosporum*	0^{h}
21	*Fusarium verticillioides*	0^{h}
22	*Fusarium oxysporum*	$53. 33^{b}$
23	*Fusarium oxysporum*	26.66^{def}
24	*Fusarium oxysporum*	26.66^{def}
25	*Fusarium incarnatum*	0^{h}
26	*Fusarium verticillioides*	13.33^{fgh}
27	*Fusarium oxysporum*	40.00^{bcd}

28	*Fusarium verticillioides*	26.66^{def}
29	*Fusarium verticillioides*	20.00^{efg}
30	*Fusarium chlamydosporum*	0^{h}
31	*Control*	0^{h}

*Means followed by the same letter are not significantly different according to Duncan's multiple range tests at 5%.

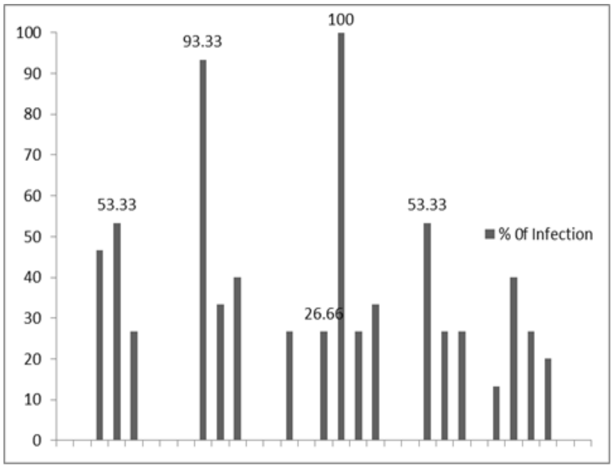

Fig. (1)Pathogenicity tests of *Fusarium Spp* on Giza 6 onion cultivar under greenhouse conditions in 2017 / 2018 onion owing season.

Isolation of endophytic fungi

Results presented in Table (2) showed that twenty nine endophytic fungi isolated from healthy allium species: onion (*allium cepa*), garlic (*allium sativum* L.) and leek (*allium porrum*) plants, fungal species belonging to 9 genera and 17 species.

Antagonistic capability of endophytic fungi against growth of *Fusarium oxysporium* in *vitro*

Twenty nine isolates of endophytic fungi were firstly tested for the antagonistic capability against *Fusarium oxysporium* (isolate No. 17) in *vitro*. Results presented in Table (3) and Fig.(2) showed that three fungal isolates exhibited inhibition percentages that were *T. roseum* caused the highest percentage of inhibition (58.11%) followed by *C.* globosum (44%) then *S. chartarum* (41.33%) while other tested isolates having no effect.

Effect of fungal formulations on incidence of onion basal rot caused by *F. oxysporum* under greenhouse conditions

Results presented in Table (4) and Fig. (3) Indicate that, in general, application of all tested fungal formulations, individually, decreased significantly percentage of onion plants infection. The least percentage of infection was observed with *T. roseum* from 100 % to 36%. The lowest effect in was observed with *S. chartarum* formulation treatment. Data also indicate that there is no significant effect between the *C.* globosum formulation and *S. chartarum* formulation.

Table (2): Entophytic fungi isolated from allium species

Allium Species	Isolates	Plant tissue
	Allium sativum	
1	*Aspergillus terreus -*	*clove*
2	*Alternaria tenuissima*	
3	*Penicillium sp*	
4	*Aspergillus terreus -*	
5	*Penicillium sp.*	
6	*Cladosporium tenussimum*	
7	*Chaetomium* globosum	
8	*Stachybotrys chartarum*	
9	*Trichothecium roseum*	
10	*Alternaria alternata*	
11	*Fusarium verticillioides*	
	Allium cepa	
12	*Fusarium nygamai*	leaf
13	*Alternaria alternata*	
14	*Aspergillus terreus*	
15	*Aspergillus flavus*	
16	*Fusarium semitectum*	
17	*Fusarium chlamydosporum*	root
18	*Fusarium verticillioides*	
19	*Fusarium subglutinans*	
20	*Fusarium incarnatum*	
21	*Aspergillus flavus*	bulb
22	*Fusarium nygamai*	
23	*Trichothecium roseum*	seed
24	Nigrospora sphaerica	
25	*Alternaria alternata*	
26	*Aspergillus flvus*	
27	*Aspergillus terreus*	
	Allium porrum	
28	*Aspergillus terreus*	leaf
29	*Penicillium sp*	

Table (3): Antagonistic capability of endophytic fungi against growth of *Fusarium oxysporium* in *vitro*.

Isolates of endophytic fungi	Inhibition (%)

Control	00.00
Trichothecium roseum	58.11
Chaetomium globosum	44.00
Stachybotrys chartarum	41.33

Table (4): Effect of endophytic fungi formulations on incidence of onion basal rot disease under greenhouse conditions.

Endophytic fungi formulations	Infection (%)
Chaetomium globosum	75.33[b]
Trichothecium roseum	36[c]
Stachybotrys chartarum	74.66[b]
Control	100[a]

*Bulb infection%; *Means followed by the same letter are not significantly different according to Duncan's multiple range test at 5%.

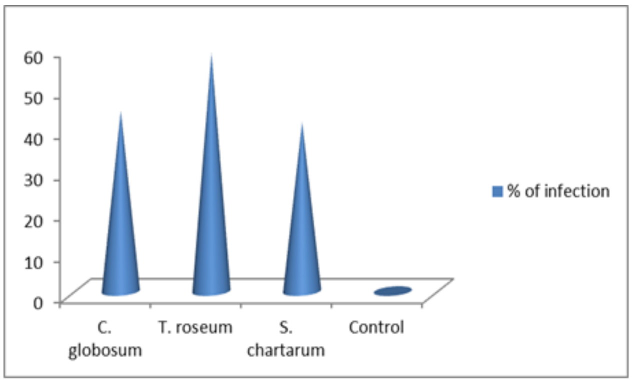

Fig. (2): Antagonistic capability of endophytic fungi against growth of *Fusarium oxysporium* in *vitro.*

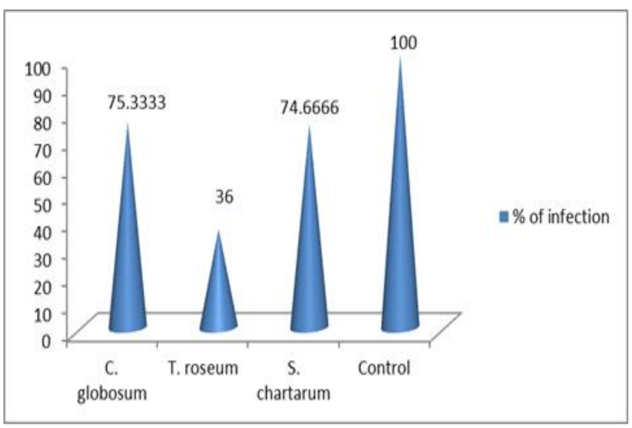

Fig (3): Effect of endophytic fungi formulations on incidence of onion basal rot disease under greenhouse conditions.

DISCUSSION

Basal rot is a highly destructive disease of onion (*Allium cepa* L.) that is caused by the fungus *Fusarium oxysporum.* f. sp. *cepae* (Hans.) Snyd. and Hans. Basal rot occurs both in the nursery and in the field Cramer and Christopher (2000). The present study also confirms that it was the aggressive pathogen of onion caused characteristics symptoms of basal rot disease. Our **obtained** results **revealed that** significant differences were observed in disease levels amongst the 30 *Fusarium spp.* isolates, there were 18 pathogenic isolates resulting in 13.33–100 % percentage of infection compared with the control (0%) Galván *et al.*, (2009), Bayraktar and Dolar (2010), Chandel and Deepika (2010) also reported the pathogenic nature of this pathogen.

In *vitro***,** the antagonistic effect of twenty nine endophytic fungi isolated from healthy allium species: onion (*allium cepa*), garlic (*allium sativum* L.) and leek (*allium porrum***)** plants on the growth of *F. oxysporum* were investigated.

Obtained Data revealed that amongst all the fungi isolated and identified, only three of them were found antagonistic activity against *Fusarium oxysporum* f. sp.*cepae the* causal pathogen of basal rot disease in onion, Similar effects were reported by (Wang *et al*., 2016; Wu *et al*., 2016) who demonstrated that several endophytic fungal species are now successfully tested as biocontrol agents against plant pathogenic fungi as well as for plant growth promotion. Numerous attempts were made to control wilt disease through biocontrol agents using endophytic fungi and bacteria (Aydi Ben Abdallah *et al*., 2016; Hong *et al*., 2007; Raza et al., 2017; Saravanakumar *et al*., 2016). However, our present study, along with a previous report supports this notion that endophytic fungi have the ability to control plant pathogens in *in vitro* conditions with diverse mechanisms. (Worapong and Strobel, 2009). From *in vitro* results the three best isolates, such as, *Trichothecium roseum, Chaetomium globosumand* and *Stachybotrys chartarum* were selected for greenhouse studies. Such results are similar to those reported by (Poulina Moya *et al*. 2016) who found that *Chaetomium globosum* is a potential bio control agent against various seed and soil borne pathogens. There are many studies with promising results on using endophyte *Chaetomium* spp. as a biocontrol agent. Endophytes are capable to reduce the host effect of fungi diseases, through secondary metabolites production as alkaloids. Soytong (1991) showed that *C. globosum* have been screened and found to control other economically important plant pathogens like *Phytopthora palmivora*, *Phytopthora parasitica*, and *Colletotrichum gloeosporioides*.

Park *et al*. (2005) stated that liquid culture of *C. globosum* F0142 could suppress the development of disease more than 80% and can exhibit antifungal activity against *Phytophthora infestans* in tomato, several strains of *Chaetomium* spp. showed different in vitro and in vivo antifungal potencies against many phytopathogens (Vitale *et al*. 2012) While Fayyadh and Yousif (2019)) showed that *C.globosum* in reducing tomato leaf spot disease caused by *A.alternata* . In this context, Abo-Elyousr *et al* (2017) pointed that *T. harzianum* isolate 3013 and *Stachybotrys chartarum* isolate 2031 could be used to control onion Stemphylium blight disease.

Our results showed that formulation of *Trichothecium roseum* successfully suppressed basal rot disease in onion under greenhouse conditions effectively reduced the basal rot disease up to 64 % compared to other formulations , these results are in agreement with those obtained by Zhang *et al* (2010) suggest that the antifungal compound trichothecin contributed the principal antagonistic action. *T. roseum* can obviously inhibit the growth of pathogenic fungi, in this context; Jayaprakashvel *et al* (2009) showed that the crude metabolites of *T. roseum* MML003 effectively reduced the sheath blight disease of rice.

CONCLUSION

The evaluation of the endophytic fungi associated with healthy allium species: onion, garlic and leek plants with antifungal potential against *F. oxysporum* causing basal rot of onion under *in vitro* conditions led to the selection of three the most promising biocontrol agents like *Trichothecium roseum*,*Chaetomium globosumand* and *Stachybotrys chartarum* were found very effective in reducing basal rot of onion severity. The application of the tested powder formulation of fungi significantly reduced the incidence of basal rot on Giza 6 onion cultivars. This strategy is very promising as an alternative to chemical fungicides.

REFERENCES

Abo-Elyousr K.A.M., Sobhy I.I. Abdel-Hafez and Ismail R. Abdel-Rahim (2017) Control of Stemphylium Leaf Blight Disease of Onion and Elevation of Seed Production Using Certain Bioagents. *International Journal of Plant Pathology, 8: 1-7.*

Aydi Ben Abdallah R, Mokni-Tlili S, Nefzi A, Jabnoun-Khiareddine H, Daami-Remadi M. (2016)Biocontrol of Fusarium wilt and growth promotion of tomato plants using endophytic bacteria isolated from Nicotiana glauca organs. Biol Control. 97:80–88. doi: 10.1016/j.biocontrol.2016.03.005.

Bayraktar, H. and Dolar F.S. (2010). Molecular identification and genetic diversity of *Fusarium* species associated with onion fields in Turkey.J. Phytopathol., 159:28-34.

Chandel, S. and R. Deepika. (2010). Recent advancesin management and controlof Fusarium yellows in Gladiolus species. J. Fruit Ornamental Plant Res., 18(2):361-380.

Campbell, W., S. Cotner and B. Pollock, (1968) Preliminary analysis of the onion seed (*Allium cepa*,L.) production problem, 1966 growing season. HortScience, Alexandria. (3): 40.

Cramer and Christopher,S.(2000) Breeding and genetics of Fusarium basal rot resistance in onion Euphytica115:159–166.

Fayyadh M. A. and Elaf Q. Yousif (2019)IOP Conf. Series: Earth and Environmental Science 388 /012017International Conference on Agricultural Sciences.

Fritsch, R. and N. Friesen, (2002) "Chapter 1: Evolution, Domestication, and Taxonomy". In Rabinowitch, H.D.; Currah. L. *Allium* Crop Science: Recent Advances. Wallingford, UK: CABI Publishing. Vol. (9): 10 - 19.

Galván G. A. , Parádi I. , Burger K., Baar J.,Thomas W. Kuyper, Scholten O.E. and Kik C. (2009). Molecular diversity of arbuscular mycorrhizal fungi in onion roots from organic and conventional farming systems in the Netherlands. Mycorrhiza 19:317–328.

Hazalin NA, Ramasamy K, Lim SM, Abdul–Wahab I, Cole ALJ, Abdul Majeed A.(2009) Cytotoxic and antibacterial activities of endophytic fungi isolated from plants at the National Park, Pahang, Malaysia. BMC Complementary and Alternative Medicine 9, 46–50.

Hong P-X, Qiu S-X, Chen H, Zhao X-D, Hu F-P. (2007)Isolation and screening of endophytic antagonistic bacteria from four species of Solanaceae. J Fujian Agric For Univ.;36:347–351. (in Chinese).

Jayaprakashvel M , M. Selvakumar, Ramesh Subramani and Srinivasan Krishnamoorthy (2009) Control of sheath blight disease in rice by thermostable secondary metabolites of *Trichothecium roseum* MML003European Journal of Plant Pathology 126(2).

Jayaraj J., Radhakrishnan N.V., Velazhahan R. (2006). Development of formulations of *Trichoderma harzianum* strain M1 for control of damping – off of tomato caused by *Pythium aphanidermatum.* Phytopathol. Plant Prot. 39 (1): 1–8.

Lager, S. (2011). Survey of Fusarium species on yellow onion (Allium cepa) on Oland. M.Sc. thesis. Uppsala: Swedish (SLU), Swedish University of Agricultural Science. pp. 13- 25.

Park JH, Choi GJ, Jang KS, Lim HK, Kim HT, Cho KY, Kim JC (2005) Antifungal activity against plant pathogenic fungi of chaetoviridins isolated from *Chaetomium globosum*. FEMS Microbiol Lett 252:309–313.

Paulina Moya, Debroa Pedemonte, Susana Amengual, Mario FrancoEE, Marina Sisterna N. (2016) Antagonism and modes of action of Chaetomium globosum species group, potential biocontrol agent of barley foliar diseases. Bol. Soc. Argent. Bot.; 51(4):569-578.

Raza W, Ling N, Zhang R, Huang Q, Xu Y, Shen Q. (2017) Success evaluation of the biological control of Fusarium wilts of cucumber, banana, and tomato since 2000 and future research strategies. Crit Rev Biotechnol.;37:202–212. doi: 10.3109/07388551.2015.1130683.

Saravanakumar K, Yu C, Dou K, Wang M, Li Y, Chen J. (2015)Synergistic effect of Trichoderma-derived antifungal metabolites and cell wall degrading enzymes on enhanced biocontrol of Fusarium oxysporum f. sp. cucumerinum. Biol Control. 2016;94:37–46. doi: 10.1016/j.biocontrol..12.001.

Suman A, Yadav AN, Verma P (2016) Endophytic microbes in crops: diversity and beneficial impact for sustainable agriculture. In: Singh D, Abhilash P, Prabha R (eds) Microbial inoculants in sustainable agricultural productivity, research perspectives. Springer, New Delhi.

Vitale A, Cirvilleri G, Castello I, Aiello D, Polizzi G (2012) Evaluation of *Trichoderma harzianum* strain T22 as biological control agent of *Calonectria pauciramosa*. BioControl 57(5):687–696.

Wang S, Liang Y, Shen T, Yang H, Shen B. (2016). Biological characteristics of Streptomyces albospinus CT205 and its biocontrol potential against cucumber Fusarium wilt Biocontrol Sci Technol.26:951–963.

Worapong J, Strobel G.A. (2009) Biocontrol of a root rot of kale by Muscodor albus strain MFC2. BioControl; 54:301–306. doi: 10.1007/s10526-008-9175-8.

Wu L, Shang H, Wang Q, Gu H, Liu G, Yang S.(2016) Isolation and characterization of antagonistic endophytes from Dendrobium candidum Wall ex Lindl., and the biofertilizing potential of a novel Pseudomonas saponiphila strain. Appl Soil Ecol. 2016;105:101–108. doi: 10.1016/j.apsoil.2016.04.008.

Zhang,X.M. GuoHong Li, Juan Ma, Ying Zeng, WeiGuang Ma, and PeiJi Zhao(2010) Endophytic Fungus *Trichothecium roseum* LZ93 Antagonizing Pathogenic Fungi *In Vitro* and Its Secondary Metabolites. The Journal of Microbiology Vol. 48, No. 6, pp. 784-790.

الملخص العربى

إنتاجية وجودة وقابلية تخزين البصل استجابة لاستخدام البوتاسيوم والمغذيات الدقيقة

منار على محمد احمد[1] – ابوالمعارف محمد الضمرانى[2] – خالد احمد امين الشيخ[2] - رفعت علام مرعى[1]

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تم عزل 29 عزلة من الفطريات الداخلية المرتبطة بانواع من العائلة البصلية (البصل والكرات والثوم) ووجد ان ثلاثة انواع من الفطريات لها تأثير مضاد على نمو فطر الفيوزاريوم مسبب عفن القاعدة فى البصل *Trichothecium roseum, Chaetomium globosum, Stachybotrys chartarum* وهى كما ادى معاملة التربة الملوثة بالمسبب المرضى بالفطريات الثلاثة المختبرة فى صورة مسحوق او بودرقبل الزراعة باسبوعين الى انخفاض معنوي في حدوث مرض عفن القاعدة في صنف البصل جيزة 6. يمكن التوصية باستخدام العوامل الحيوية للحد من مرض العفن القاعدى في البصل و قد تكون هذه الاستراتيجية واعدة للغاية كاحد البدائل لمبيدات الفطريات الكيميائية.