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A Review of Organic Agricultural of Some Vegetables Crops

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Abstract

Organic farming is a sustainable faming system that produces healthy crops and livestock without damaging the environment. It avoids the use of artificial chemical fertilizers and pesticides, relying instead on developing a healthy and fertile soil and growing a mixture of crops. In this way, the farm remains biologically balanced with variety of insects and wildlife that act as natural predators of crop pests, and soil full of microorganisms and earthworms to keep its vitality. Animals are reared naturally without any routine use of chemical to increase the growth rate. Organic farming refers to agricultural production systems used to produce food and fiber. Organic farming management relies on developing biological diversity in the field to disrupt habitat for pest organisms, and the purposeful maintenance and replenishment of soil fertility. Organic farmers are not allowed to use synthetic pesticides or fertilizers. All kinds of agricultural products are produced organically, including produce vegetable crops, grains, meat, dairy, eggs, flowers, and processed food products. Some of the essential characteristics of organic systems include: design and implementation of an "organic system plan" that describes the practices used in producing crops and livestock products; a detailed recordkeeping system that tracks all products from the field to point of sale; and maintenance of buffer zones to prevent inadvertent contamination by synthetic farm chemicals from adjacent conventional fields.

Keywords

Organic Agricultural, Vegetable Crops, Food Safety

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1. Introduction

Organic agriculture is developing rapidly, and statistical information is now available from 154 countries of the world. According to the Research Institute of Organic Agriculture (FiBL) and the International Federation of Organic Agriculture Movements (IFOAM), 35 million hectares of agricultural land were under organic management (both certified and in conversion) in 2008. The regions with the largest areas of organically managed agricultural land are Oceania (12.1 million hectares), Europe (8.2 million hectares) and Latin America (8.1 million hectares). The cropped area (arable land and permanent crops) constitutes 8.2 million hectares. Horticultural crops play an important role in organic agriculture. These crops (temperate and tropical fruit, citrus fruit, berries, grapes and vegetables) constitute at least 760,000 hectares and thus almost ten percent of the organic cropland. Regarding consumer preference, fresh vegetables and fruit are among the most popular organic products. In Switzerland for instance, organic vegetables account for ten percent of all vegetables sold, organic fruit for 6.5 percent of all fruit. In the U.S., organic fruits and vegetables account for

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37% of all organic food sales (retail value). The most important categories are vegetables (28 percent of the organic horticultural land); grapes (20 percent) and tropical and subtropical fruit (19 percent).

Organic agriculture is a production system that sustains the health of different type of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved (www.ifoam.org) The phenomenon of organic agriculture has started in the 1930s and 1940s in the developed countries as a consequence of the raised dangerous effects of using synthetic fertilizers and pesticides in agriculture on both health and environment. In other words, they were looking for safe food that is free of pesticides and any additives (El-Meliegy, 2010).

Organic foods were considered, for long time, a kind of luxury goods. In 2006, it was commercially practiced in 120 countries, representing 31 million hectares of certified croplands and pastures (~ 0.7 percent of global agricultural lands and an average of 4 percent in the European Union), and a market of US$40 billion (~ 2 percent of food retail in developed countries) (Willer and Youssefi, 2007). In 2009, organic agriculture is no longer a phenomenon of developed countries. It's practiced in 160 countries and 37.2 million hectares of agricultural land are managed organically by 1.8 million farmers. The global sales of organic food and drink reached 54.9 billion US dollars in 2009 (IFOAM 2010).

The majority of certified organic produce is destined for export markets, with the large majority being exported to the European Union. The African market for organic products is still small. Certified organic products are currently recognized in only a few domestic markets, including Egypt, South Africa, Uganda, Kenya and Tanzania. For exports, most African countries rely upon foreign standards. To date, the majority of organic production that is certified in Africa has been certified according to the EU regulation for organic products As for Egypt, although there is an augmented supply market for organic food gained from its significance as a safety production, high quality food and its positive environmental influences. The supply market is growing at much quicker rate than organic food consumption does (IFOAM, 2010). The logic interpretation for this situation is that organic agriculture is grown mainly for export market. As a result, the share of organic agricultural land has increased and has represented about 0.01% of the total agricultural land. It ranked third between African countries after Uganda and Tunisia (IFOAM, 2008).

2. Scientific Research About Organic Agriculture of Vegetable Crops

2.1. About Plant: "Vegetable Crops"

Many investigators emphasized the beneficial role of organic manures incorporated with biofertilizer to stimulate plant growth, yield of vegetables among them Abdalla, *et al.* (2001) on pepper; Abou-Hussein, *et al.* (2002) on potatoes; Adam, *et al.* (2002) on cantaloupe; Rizk, *et al.* (2003) on squash and Shams (2003) on sweet pepper.

Oil management practices have recently changed dramatically including an increased use in synthetic fertilizers and pesticides to help crop yields. However, some studies have suggested that the excessive use of these agrochemicals may actually increase pest problems in the long run (Altieri and Nicholls 2003).

Dauda *et al*., 2008. Reported that, application of poultry manure significantly enhance growth parameter vigor and number of fruits of watermelon during the two seasons.

Organic manures such as cattle manure and poultry manure improve the soil structure, airation, slow release nutrient which support root development leading to higher yield and better quality of broccoli plants Abou El-Magd *et al.,* 2005. Moreover, organic matter plays an important role in the chemical behavior of several metals in soils throughout its active groups (flavonic and humic acids) which have the ability to retain the metals in complex and chelate forms.

Organic manure plays a direct role in plant growth as a source of all necessary macro and micronutrients in available forms during mineralization, improving the physical and physiological properties of soils.

Hala Kandil and Nadia Gad (2009) stated that, Using organic manure plus inorganic solution fertilizers gave a significant promotes effect of plant growth, heads yield, chemical constituents and mineral composition of broccoli.

About vermicompost Adriana Hernández *et al.,* (2010) found that, the vermicompost treatment showed a higher contribution of Mg, Fe, Zn, and Cu, and lower Na in lettuce leaf content when compared to compost usage. Several organic fertilizer formulations are now available in the market that enables the formulation of an efficient fertigation program for organic vegetable production (Ferguson, 2003 and Tuzel *et al.,* 2003).

Several studies on comparative nutritional quality of organic and conventional crops have been conducted, on different vegetable crops. Worthington (2001) suggested that there appeared to be genuine differences in the nutrient content of

organic and conventional crops. Zaller (2006) used vermicompost as a substitute for peat in potting media in tomato cultivation, and suggested that nearly all determined parameters of morphological and chemical fruit quality (circumference, dry matter content, firmness of peel, contents of C, N, P, K, Ca, Mg, Vitamin C, glucose, fructose) were significantly affected by the substrate mixture used to raise the seedlings.

Concerning organic fertilizers, many investigators found that about sweet pepper, addition of organic fertilizer had a major effect on vegetative growth characters of sweet pepper (Abdel-El-Moez *et al.,* 2001, Arancon *et al.,* 2005, Ewulo *et al.,* 2007 and Wei Lan *et al.,* 2010), total yield (Salama and Zake 2000, Shehata *et al.,* 2004, Awodun *et al.,* 2007, Dass *et al.,* 2008 and Huez-Lopez *et al.,* 2011) and quality of sweet pepper plants (Amor and Del,. 2007, Arafa and Shalabey 2007 and Szafirowska and Elkner 2008)

Many investigators reported that, the addition of bio fertilizer had a major effect on vegetative growth characters of sweet pepper (Berova and Karanatsidis 2009., Kaya *et al.,* 2009 and Berova *et al.,* 2010, total yield (Berova and Karanatsidis 2008) and quality of sweet pepper plants (Ghoname and Shafeek 2005 and Reyes *et al.,* 2008).

Abou El-Magd *et al.* (2006) the highest vegetative growth of broccoli plants was recorded by plants which was supplied with 100% cattle manure. However, the highest total yield and quality of broccoli were recorded by adding poultry manure in the two seasons. Using poultry manure with Southern star cv. gave the highest total yield and quality of broccoli.

Al-Ziadi and M. Aloosy (2011) demonstrated that, addition of organic sheep manures to soil caused significant reduce in Ece, SAR and Soil pH, and increase in yield of flower disk. Increasing rates of P fertilizer caused significant increase in yield of flower disk by 45% and 73% for 45 and 90 Kg P.ha-1 respectively compared with 0Kg P.ha-1, while it has no effect on soil chemical characteristics tested of cauliflower.

Deore *et al.,* (2010) studied the effects of foliar application of a novel organic liquid fertilizer on growth and yield in chilli (*Capsicum annum* L. var. Shama) they found that the present investigation has revealed the consistent and significant results for growth parameters due to application of novel organic liquid fertilizer.

Taha *et al.,* (2011) In light of the results it is concluded that Azotobacter and sheep residues do have an additive impact on the growth and yield of squash plants. Azotobacter alone or in combination with sheep residues significantly hence vegetative (shoot) growth of squash plants and substantially improves the fruit yield and quality of the squash cultivars. This will greatly help in development of organic farming techniques in the area and will considerably reduce the cost of production and environmental hazards due to greater dependence on synthetic fertilizers.

Almulla *et al.,* (2012) studied the effect of three organic fertilizer formulations on growth and yield of cherry tomato (*Lycopersicon esculentum* cv. Sakura). A mixture of organically approved vermicompost, sphagnum peat moss, coco peat and perlite at 1:1:1:1 ratio (volume basis) was used as growing substrate. The formulations like Earth Juice products (T1), Fish Hydrosylate and seaweed (T2), and Fish Fertilizer and seaweed (T3) were compared against the soil-based inorganic cultivation (control) and were replicated. Stock solutions were prepared for each organic fertilizer formulation and one liter of diluted stock solution. The results showed that the organic fertilizer treatments remained comparable with control in terms of height, leaves and chlorophyll index in the experiment conducted in 2009. In the experiment conducted in 2008 a similar trend was observed in leaf number of plants; whereas plant height remained significantly high in the organic treatments against the control. Though control plants excelled in total yield of the plant in both experiments when compared to the organic fertilizer treatments, the organic treatments remained comparable to the control.

Fawzy *et al.,* (2012) studied the evaluate response of sweet pepper (*Capsicum annuum* L.) plants to nitrogen fertilizer source under field conditions. They reported that different combinations of mineral nitrogen, organic (chicken manure) as well as bio fertilizer (Microbin and Biogen) were evaluated plant growth, total yield, fruit quality and some chemical constituents of sweet pepper fruits were assessed. Results showed that sweet pepper fertilizer plants with the mineral nitrogen as a chemical fertilizer had increased the vegetative growth, yield and fruit quality. Bio-N fertilizer improved vegetative growth, yield and quality of sweet pepper plants. Furthermore, using organic manure increased yield and quality of sweet pepper fruits. It can be concluded that nitrogen fertilizer as a mineral N fertilizer combined with bio-N fertilizers was the best treatment to obtain the highest vegetative growth, yield and fruit quality of sweet pepper.

Michael *et al,* (2012) the results showed that chicken manure levels significantly ($P < 0.05$) affected growth, yield and nutritional quality of lettuce. A trend of superiority of the different level of chicken manure application was observed as lettuce provided with 60 t/ha exhibited higher values in number of leaves, plant height, marketable yield and mean leaf dry mass. The second best results were obtained from plants supplied with 40 t/ha followed by plants previously fertilized with 20 t/ha and the lowest from those provided

with inorganic fertilizer. However, there was no significant ($P > 0.5$) difference in iron content on fresh mass basis for all treatments. Results of this experiment showed that inorganic fertilizer was less suitable in lettuce production. Lettuce may be grown using 60 ton/ha chicken manure for a more productive enterprise.

Mohsen Jahan *et al.,* (2012) in general, the results showed amongst organic fertilizers used in this experiment, the chicken manure solely or combined with nitragin (Bio fertilizer) has superiority compared to other organic fertilizers, although, chicken and sheep manure, and vermicompost application in combination with or without nitragin inoculation, were not resulted in significant differences due to most studied traits. Cow manure solely application was better than in combination with nitragin. At a glance, utilization of biofertilizer combined with organic fertilizers could be resulted to an optimum quantitative and qualitative yield without any agrochemicals in a low input production system of zucchini squash.

2.2. About Soil

Organic manure play direct role in plant growth as a source of all necessary macro and micronutrients in available forms during mineralization and improving physical and chemical properties of soils (Chaterjee *et al.,* 2005). Anant-Bahadur *et al.,* (2006) pointed that organic matter plays an important role in the chemical behaviour of several metals in soils throughout its active groups (Flavonic and humic acids) which have the ability to retain the metals in complex and chelate forms.

Organic manure can serve as alternative practice to mineral fertilizers for improving soil structure (Dauda *et al.,* 2008) and microbial biomass (Suresh *et al.,* 2004). Organic manure plays a direct role in plant growth as a source of all necessary macro and micronutrients in available forms during mineralization and improves physical and chemical properties of soils (Chaterjee *et al.,* 2005). Anant-Bahadur *et al.,* (2006) pointed that organic matter plays an important role in the chemical behavior of several metals in soils throughout its active groups (Flavonic and humic acids) which have the ability to retain the metals in complex and chelate forms.

The economic effect of liquid organic fertilizer on agriculture may be a factor in the extension of its practice in larger areas. The rates of compost required to supply sufficient N requirements might be economically challenging for farmers. Therefore, the organic liquid fertilizers might help in reducing the need of high rates of compost to maintain proper N amount and in reducing the expenses. Sureyya Altintas and Funda Eryilmaz (2012) investigate the effects of mineral and liquid organic fertilizers on some nutritional characteristics of bell pepper. Results show that the main effects and interaction between cultivars and fertilizers were not statistically significant on the subject parameters in this experiment. However, the application of mineral fertilizer resulted in the highest ascorbic acid content in fresh fruits.

Over the last few years, consumer awareness of food-safety issues and environmental concerns has increased the interest in organic farming (Bavec and Bavec, 2007). Almost from the beginning, arguments were gradually raised about organic growing practices. Numerous re-searchers have compared organic and conventional growing techniques and have revealed reasonable contradictory findings on organically grown products (their quality and yield). Foods and vegetables are the main topic of this controversy due to their significance as being source of antioxidants (Mitchell and Chassy, 2004). There has also been a concern for hygiene of composts. Most findings from comparative studies show that compost does not improve the yield (Flores *et al.,* 2009; Amor, 2007; Evanylo *et al.,* 2008 and Gül *et al.,* 2007,), however, some findings indicate that organic fertilizers sufficient to produce vigorous, healthy and high yielding plants at levels comparable to plants treated with synthetic N fertilizers (Olaniyi and Akanbi, 2007), and also that yield is higher when compost combined with bio N and mineral N (Ghoname and Shafeek, 2005). Nonetheless, both conventional and organic agricultural practices consist of dynamics that represent variations, depending upon the regions, soil quality, pests, growing season, grower, farm, sampling time, climate and genotype. Therefore making comparisons between these systems is very difficult (Mitchell and Chassy, 2004; and; Mitchell *et al.,* 2006).

Fertilization is one of the most important dynamic to consider, when making comparisons between organic and conventional agriculture practices. There is a wide range of organic wastes and by-products that are available for plant nutrition in organic growing such as poultry manure, cattle manure, plant residues, etc. Nevertheless, because of their complex composition, it is very challenging to apply sufficient amount that will provide plant requirements (Mitchell and Chassy, 2004).

Although, it has proven to be valuable to improve the organic matter content, fertility, porosity, water holding capacity and bulk density of soil through the addition of organic composts (Zaccheo *et. al.,* 2002, Evanylo *et al.,* 2008 and Mitchell *et al.,* 2006), more quickly with the higher rates (Evanylo *et al.,* 2008), some practices show that organic composts do not provide nitrogen in a form that is as readily accessible to plants as conventional fertilizers because of their high resistance to degradation (Zaccheo *et al.,* 2002), and of a slower rate of availability and mineralization of nutrients

from the organic composts (Amor, 2007).

Consequently, the yield of the crops is declined. Or it is difficult to say that improvements in soil physical properties benefit yield unless higher rates of compost is applied to soil (Evanylo *et al.,* 2008). On the other hand, some results indicate that the slower release of nitrogen, as occurs when manure is substituted for synthetic fertilizers, results in higher polyphenol concentration in food, thus organic food compared to conventional ones has more health-promoting substances. It appears that the most strong influence or differences between organic and conventional systems is the quantity and behavior of N (Mitchell *et al.,* 2006).

Esawy Mahmoud *et al.,*(2009) The results showed that the mature compost of plant residues was higher in saturation percent and lower in C/N ratio, pH, electrical conductivity and bulk density than the animal and mixed composts. The study demonstrated that the average cumulative cucumber yield was higher with 75% mineral N + 25% organic N treatments compared to other treatments throughout the experiment, especially in the plots treated with plant compost during the two successive summer seasons of 2007 and 2008. The average nitrate of petioles in the plots treated with N 100% organic decreased by 52-69% compared to 100% mineral N. The average nitrate content of cucumber fruits was only detected in the plots treated with 100% organic N from the composts tested. The nitrogen and phosphorus content of the soil significantly increased, as did the soil organic matter, with the increase of organic nitrogen applied. The experimental results confirmed that the combination of organic and inorganic fertilizers could increase plant growth, yield, and quality and soil fertility. It also confirmed that composted organic wastes can be used to substitute for around 25% of chemical nitrogen fertilizers.

The economics of organic agriculture may be a factor in the extension of its practice to larger areas since the rates of compost required to supply sufficient N requirements might be economically challenging for farmers (Evanylo *et al.,* 2008). Therefore organic liquid fertilization products can help in reducing the need for high rates of compost to maintain proper amount of nutrients and hence in reducing the expenses.

3. Conclusion

It could be concluded that the scientists in organic agricultural should be working on how they could development and promote organic farming to produce safe and clean production of vegetable crops for local production and export because the agriculture is a major source for income in many countries in the worldwide.

References

[1] Abdalla, A. M., F. A. Rizk and S. M. Adam, 2001. The productivity of pepper plants as influenced by some bio fertilizer treatments under plastic house conditions. Bulletin of Faculty of Agriculture, Cairo University, 52: 4: 625-639.

[2] Abdel-El-Moez, M. R., N. Gad and S. A. Wanas, 2001. Impact of banana compost added with or without elemental sulphur on nutrients uptake, yield, soil moisture depletion and water use efficiency of pepper plants. Annals of Agricultural Science, Moshtohor, 39(2): 1355-1372.

[3] Abou El-Magd, M. M, Hoda, A. Mohamed and Z. F. Fawzy, 2005. Relationship growth, yield of broccoli with increasing N, P or K ratio in a mixture of NPK fertilizers (Brassico oleracea var italica plenck). Annals of Agriculture Science, Moshtohor. Vol. 43(2): 791-805.

[4] Abou El-Magd, M. M., A. M, El-Bassiony and Z. F. Fawzy. 2006. Effect of organic manure with or without chemical fertilizers on growth, yield and quality of some varieties of broccoli plants. Journal of Applied Sciences Research, 2(10): 791-798.

[5] Abou-Hussein, S. D., I. El-Oksh, T. El-Shourbagy, and A. M. Gomaa, 2002. Effect of cattle manure, bio-fertilizers and reducing mineral fertilizer on nutrient content and yield of potato plant. Egypt. J. Hort. 29 (1): 99-115.

[6] Adam, Safia. M., A. M. Abdalla and Fatma. A. Rizk, 2002. Effect of the interaction between the mineral and bio-fertilizer on the productivity of cantaloupe (Cucumis melo L.) under the newly reclaimed soils conditions. Egypt. J. Hort. 29 (2) 301-315.

[7] Adriana Hernández, Hugo Castillo, Dámaris Ojeda, Ana Arras, Julio López, and Esteban Sánchez. 2010. Effect of vermicompost and compost on lettuce production. Chilean Journal of Agricultural Research 70(4):583-589.

[8] Almulla, L, N. R. Bhat, V. S. Lekha, B. Thomas, S. Ali, P. George, and M. Xavier. Effect of three organic fertilizer formulations on growth and yield of cherry tomato (*Lycopersicon esculentum* cv. sakura) under soilless organic greenhouse production System. European Journal of Scientific Research Vol. 80 No. 3, pp. 281-288.

[9] Altieri M, Nicholls FN. 2003. Tolerance and effect of leaf fertilization treatments on vegetables. Gartebauwissenscharft. 51: 58-62.

[10] Al-Ziadi. H. S. S Y. A. M. Aloosy. 2011. The effect of irrigation water quality, organic material and phosphorus on some soil chemical characteristics and yield of cauliflower. The Iraqi Journal of Agricultural Sciences 42 (Special Issue): 44-52.

[11] Amor FM (2007). Yield and fruit quality response of sweet pepper to organic and mineral fertilization. Renewable Agric. Food Syst. 22(3): 233-238.

[12] Amor, F. and M. Del, 2007. Yield and fruit quality response of sweet pepper to organic and mineral fertilization. Renewable Agriculture and Food Systems, 22(3): 233-238.

[13] Anant-Bahadur, Jagdish-Singh, K. P., Singh, A. K Upadhyan and Mathura-Rai, 2006. Effect of organic amendments and biofertilizers on growth, yield and quality attributes of Chinese cabbage (*Brassica pekinensis*). Indian J. of Agric. Sci., 76(10): 596-598.

[14] Arafa, M. M. and O. E. Shalabey, 2007. Effect of zinc and organic manures on yield and fruit chemical composition of pepper plants grown on newly reclaimed soils. Annals of Agricultural Science (Cairo). 52(2): 441-450.

[15] Arancon, N. Q., C. A. Edwards, P. Bierman, J. D. Metzger and C. Lucht, 2005. Effects of vermicomposts produced from cattle manure, food waste and paper waste on the growth and yield of peppers in the field. Pedobiologia, 49(4): 297-306.

[16] Awodun, M. A., L. I. Omonijo and S. O. Ojeniyi, 2007. Effect of goat dung and NPK fertilizer on soil and leaf nutrient content, growth and yield of pepper. International Journal of Soil Science, 2(2): 142-147.

[17] Bavec F, and Bavec M (2007). Organic production and use of alternative crops. Taylor & Francis Group, LLC, USA, p. 230.

[18] Berova, M. and G. Karanatsidis, 2008. Physiological response and yield of pepper plants (*Capsicum annum*, L.) to organic fertilization. Journal of Central European Agriculture, 9(4): 715-722.

[19] Berova, M. and G. Karanatsidis, 2009. Influence of bio-fertilizer, produced by Lumbricusrubellus on growth, leaf gas-exchange and photosynthetic pigment content of pepper plants (*Capsicum annuum*, L.). Acta Horticulturae, 830: 447-452. 3931 J. Appl. Sci. Res., 8(8): 3921-3933, 2012.

[20] Berova, M., G. Karanatsidis, Sapundzhieva and K., Nikolova, 2010. Effect of organic fertilization on growth and yield of pepper plants (*Capsicum annuum*, L.). Folia Horticulturae. 22(1): 3-7.

[21] Chaterjee, B., P. Ghanti, U. Thapa and P. Tripathy, 2005. Effect of organic nutrition in sport broccoli (*Brassica aleraceae* var. italicaplenck), Vegetable Science, 33(1): 51-54.

[22] Dass, A., N. K. Lenka, U. S. Patnaik and S. Sudhishri, 2008. Integrated nutrient management for production, economics, and soil improvement in winter vegetables. Internatioal Journal of Vegetable Science, 14(2) 104-120.

[23] Dauda S. N., F. A. Ajayi1 and E. Ndor. 2008. Growth and yield of watermelon (*Citrullus lanatus*) as affected by poultry manure application. Journal of Agriculture &Social Sciences. 04–3–121–124.

[24] Deore G. B., Limaye A. S., Shinde B. M. and S. L. Laware*. 2010. Effect of novel organic liquid fertilizer on growth and yield in chili (*Capsicum annuum* L.). ASIAN J. EXP. BIOL. SCI.: 15-19.

[25] El-Meliegy, N. 2010. An economic study for development of Organic Agricultural Exports in El-Fayoum Governorate. Ph. D. thesis, Fayoum University, Egypt.

[26] Esawy Mahmoud, Nasser Abd EL-Kader, Paul Robin, Nouraya Akkal-Corfini and Lamyaa Abd El-Rahman. 2009. Effects of different organic and inorganic fertilizers on cucumber yield and some soil properties. World Journal of Agricultural Sciences 5 (4): 408-414.

[27] Evanylo G, Sherony C, Spargo J, Starner D, Brosius M, and Haering K (2008). Soil and water environmental effects of fertilizer-, manure-, and compost-based fertility practices in an organic vegetable cropping system. Agric. Ecosyst. Environ. 127: 50-58.

[28] Ewulo, B. S., K. O. Hassan and S. O. Ojeniyi, 2007. Comparative effect of cow dung manure on soil and leaf nutrient and yield of pepper. International Journal of Agricultural Research, 2(12): 1043-1048.

[29] Fawzy Z. F., A. M. El-Bassiony, Li Yunsheng, Ouyang Zhu and A. A., Ghoname. 2012. Effect of mineral, organic and bio-n fertilizers on growth, yield and fruit quality of sweet pepper. Journal of Applied Sciences Research, 8(8): 3921-3933.

[30] Ferguson, J., 2003. "How organic farming inputs are evaluated. University of Florida, greenhouse tomato transplants", Canadian Journal of Plant Science. Pp 167-168.

[31] Flores P, Hellin P, and Fenoll J (2009). Effect of manure and mineral fertilization on pepper nutritional quality. J. Sci. Food. Agric. 89(9): 1581-1586.

[32] Ghoname, A. and M. R. Shafeek, 2005. Growth and productivity of sweet pepper (*Capsicum annum,* L.) grown in plastic house as affected by organic, mineral and bio-N-fertilisers. Journal of Agronomy, 4(4): 369-372.

[33] Gül A, Kıdoğlu F, and Anaç D (2007). Effect of nutrient sources on cucumber production in different substrates. Scientia Horticulturae, 1132: 216-220.

[34] Hala Kandil and Nadia Gad. 2009. Effects of inorganic and organic fertilizers on growth and production of brocoli (*Brassica oleracea* l.). Factori şi Procese Pedogenetice din Zona Temperată 8 S. nouă. 61-69.

[35] Huez-Lopez, M. A., A. L. Ulery, Z. Samani, G. Picchioni and R. P. Flynn, 2011. Response of Chile pepper (Capsicum annuum, L.) to salt stress and organic and inorganic nitrogen sources: I. Growth and yield. Tropical and Subtropical Agroecosystems, 14(1): 137-147.

[36] IFOAM (International Federation for Organic Agriculture Movements). 2008. "FAO Workshop on Organic Agriculture and Climate Change.

[37] IFOAM Survey 2010, Presented at BioFach Congress Nürnberg, February 19, 2010, Version of March 19, 2010.

[38] Kaya, C., Muhammed Ashraf; O. Sonmez, S. Aydemir, A. L. Tuna and M. A. Cullu, 2009. The influence of arbuscular mycorrhizal colonisation on key growth parameters and fruit yield of pepper plants grown at high salinity. Scientia Horticulturae, 121(1): 1-6932 J. Appl. Sci. Res., 8(8): 3921-3933, 2012.

[39] Michael T. Masarirambi, Phiwokwakhe Dlamini, Paul K. Wahome and Tajudeen O. Oseni 2012. Effects of chicken manure on growth, yield and quality of lettuce (*Lactuca sativa*, L.) 'taina' under a lath house in a semi-arid sub-tropical environment. American-Eurasian J. Agric. & Environ. Sci., 12 (3): 399-406.

[40] Mitchell AE, and Chassy AW (2004). Nutritional quality and organic agriculture. The Soy Connection 12(4): 3-5.

[41] Mitchell AE, Hong Y, Koh E, Barrett DM, Bryant DE, Denison F, Kaffka S (2006). Ten-year comparison of the influence of organic and conventional crop management practices on the content of flavonoids in tomatoes. J. Agric. Food. Chem. 54(21): 8244-8252.

[42] Mohsen Jahan, Alireza Koocheki, Mohammad-Kazem Tahami, Mohammad-Behzad Amiri and Mahdi Nassiri-Mahallati. 2012. The effects of simultaneous application of different organic and biological fertilizers on quantitative and qualitative characteristics of *Cucurbita pepo,* L. Journal of Life Sciences (6) 1145-1149.

[43] Olaniyi JO, and Akanbi WB (2007). Effect of organo mineral and inorganic fertilizers on the yield quality of fluted pumpkin (*Telfaria occidentalis* hook. F.). Afr. Crop Sci. Confr. Proc. 8: 347-350.

[44] Reyes, I., L. Alvarez, H. El-Ayoubi and A. Valery, 2008. Selection and evaluation of growth promoting rhizobacteria on pepper and maize. Bioagro, 20(1): 37-48. 28.

[45] Rizk, Fatma A., M. R. Shafeek and Y. I. Helmy, 2003. A comparative study between the application of bio and/or mineral fertilizers with squash plant. Egypt. J. Appl. Sci., 18(4A): 257-269.

[46] Salama, G. M. and M. H. Zake, 2000. Fertilization with manures and their influence on sweet pepper of plastic-houses. Annals of Agricultural Science, Moshtohor, 38(2): 1075-1085.

[47] Shams, A. S. A. 2003. Response of sweet pepper crop to organic and biofertilizer application. M. Sc Thesis Fac. Agric. Moshtohor, Zagazig Univ., Egypt, pp 148.

[48] Shehata, S. A., A. G. Behairy and Z. F. Fawzy, 2004. Effect of some organic manures on growth and chemical composition of sweet pepper (*Capsicum annuum*, L) grown in a sandy soil. Egyptian Journal of Agricultural Research. 82: 2(Special Issue), 57-71.

[49] Suresh, K. D., G. Sneh, K. K. Krishn and C. M. Mool, 2004. Microbial biomass carbon and microbial activities of soils receiving chemical fertilizers and organic amendments. Archives. Agron. Soil Sci., 50: 641-7.

[50] Sureyya Altintas and Funda Eryilmaz. 2012. The effects of mineral and liquid organic fertilizers on some nutritional characteristics of bell pepper. African Journal of Biotechnology Vol. 11(24), pp. 6470-6475.

[51] Taha Z. Sarhan, Ghurbat H. Mohammed and Jiyan A. Teli. 2011. Effect of bio and organic fertilizers on growth, yield and fruit quality of summer squash. Sarhad J. Agric. Vol. 27, No. 3. 377-383.

[52] Tuzel, Y., A., Gul., I. H., Tuzel, and A. R., Ongun, 2003. "Organic cucumber production under greenhouse conditions". Acta Horticulturae 608 pp 149-157.

[53] Wei Lan, Yang Shao Hai, Zou Xian Zhong; Wu Jin Long and Ning Jian Feng. 2010. Effects of different modifiers on improvement of acid soils. Journal of Hunan Agricultural University, 36(1): 77-81. 3933 J. Appl. Sci. Res., 8(8): 3921-3933, 2012.

[54] Willer, H. and Youssefi, M,. 2007. The World of Organic Agricutlure: Statistics and Emerging Trends 2007. International Federation of Organic Agriculture Movements IFOAM, Bonn, Germany and Research Institute of Organic Agriculture FiBL, Ackerstrasse, Switzerland.

[55] Worthington, V., 2001. "Nutritional quality of organic versus conventional fruits, vegetables, and grains". The Journal of Alternative and Complementary Medicine. 7, (2), pp 161-173.

[56] Zaccheo P, Cabassi G, Ricca G, Crippa L (2002). Decomposition of organic residues in soil: Experimental technique and spectroscopic approach, Organic Geochem. 33: 327-345.

[57] Zaller, J. G., 2007."Vermicompost as a substitute for peat in potting media: Effects on germination, biomass allocation, yield and fruit quality of three tomato varieties" Scientia Horticulturae, 112, (2), 26 pp. 191-199.