Original Research Article

Use of Different Types of Fertilizers in Cucurbitaceae Family

Jyoti, Lovpreet Singh and Jatinder Singh*

Department of Horticulture, SAGR, Lovely Professional University, Punjab, India

*Corresponding author

A B S T R A C T

Acceptable fertilization of cucurbits has several advantages in terms of uniform growth, and seedling vigor, in literature there is lot of evidence that these plants have proficient processes to repair various kinds of nutritional stresses. Yet it is most significant and foremost decisions that which source (fertilizer) is to be used, when to apply fertilizer and what should the quantity of the fertilizer. Requirement of fertilizer is variable according to type of cultivation i.e. field and protected cultivation. Application of fertilizer under open field conditions involves of a basic dose and it is before sowing and during cultivation 1-3 side dressings are required, whereas continuous application of fertilizers should be there under protected cultivation system. Recently a new tendency has been noted, is the increasing attention in environmental preservation and an extending programme toward organic and sustainable agriculture. Application of organic fertilizer alone or in combination with bio fertilizer + inorganic fertilizers, are studies in organic ecosystems are normally long-term and consequently our present understanding is still in its infancy.

Keywords
Cucurbits, Organic fertilizers, Quality and Yield

Introduction

Vegetables are the main part of human nutrition. Now a day's people have more awareness about their health. Organically produced vegetables preferable by the consumer in the market. So, the use of organic, bio-fertilizers and various fertilizer combinations helps us to give good and safe quality products. On the other point of view, the price of inorganic fertilizers is more and it would increase the cost of cultivation of the farmer. Thus, combined use of organic and inorganic fertilizers is considered to be the best option for crop production, improve quality, sustainability and safe for environmental use. Application of vermicompost and bio-fertilizers together influences the plant metabolism by increasing the availability of applied nutrients and moisture retention capacity (Akbar et al., 2009).

Cucurbits belong to family cucurbitaceae. This family comprises about 118 genera and 825 species which are of consumed by humans. Though the maximum is originated from Old World, yet several species belong to the New World and at least about seven genera in linked with both hemispheres. There is remarkable diversity (genetic) within same family, and the range of adaptation for
tropical and subtropical areas, temperate regions and arid deserts (Rai et al., 2008). Despite their agronomic, culinary and cultural significance, these crops lack consideration from researchers. Due to this reason these crops are often classified as orphan crops (IPGRI, 2002). Mostly plants of cucurbits species are grown in the summer season and rainy season in tropical and sub-tropical regions (Sanjur et al., 2002). In temperate countries these are grown under protected conditions where temperature, RH, light, CO₂ etc., are maintained automatically in controlled conditions according to the crop requirements. River bed cultivation also used for cucurbits during winter season. Cucurbits are also cultivated for seed consumption as they are considered to be rich in nutrients (De Mello et al., 2000). They are cultivated in different parts of the world for their nutritional value as these are rich in vitamins, phosphorus, calcium, protein, carbohydrates etc. Most of cucurbits have been domesticated and grown as produced vegetables forming basic ingredients for human diet (Thoenissen et al., 2009).

Cucurbitaceae family have tremendous medicinal properties such as anti-HIV, anxiolytic, antipyretic, anti-diarrhoeal, carminative, antioxidant, antidiabetic, antibacterial, laxative, anthelmintic, antitubercular, purgative and hepatoprotective. It is also employed as an abortifacient, diuretic, and cardio tonic agent. They also show strong anti-inflammatory, antitussive, cytotoxic, and expectorant properties (Rajasree et al., 2016). Different parts of cucurbits fruit or their seeds are supposed to contain anthelmintic, laxative, and emetic qualities due to the secondary metabolite like cucurbitacin content etc. Some cucurbits crops like bitter gourd and other are well known for their distinctive medicinal properties. Fruits of cucurbitaceae are consumed in many forms like salad (long melon, gherkins and cucumber), famous sweets (ash gourd and pointed gourd), deserts (melons), pickles (gherkins) and above all they are used for gastronomic purpose (Rai et al., 2008).

During 2017-18 total sowing area in Punjab was 16.23 thousand hectare and total production was 258.56 thousand tonnes with average productivity of 159.28 tonne per hectare. Under Indian conditions 5.6% share is contributed by cucurbits. According to estimation of FAO, the area under these crops were 4,290,000 ha while productivity was 10.52 t/ha. It is estimated that cucurbits provide better potential to incline production for national food security (Rai et al., 2008). For the successful and good quality crop production proper, adequate amount of fertilizers are the prime need. At present, due to the overuse of inorganic fertilizers, the product quality has declined. It also diminishes soil health and is harmful to the environment. According to Indian input survey reported in Table 1 was given by (Anonymous, 2017a).

**Effect of inorganic fertilizers**

Umamaheswarappa et al., (2005) reported that nitrogen application showed a significant effect on number of days required for initiation of earliness in flowering, number of days required for first fruit set whereas phosphorus application also exhibited a positive effect on flower initiation, development whereas potassium application had no substantial effect on flowering, fruit set of cucumber in cv. Poinsette. Song et al., (2006) concluded that nitrogen, phosphorus and potassium nutrients uptake by cucumber increased with advanced fertilizer rate. Jilani et al., (2009) stated that application of NPK fertilizer (100-50-50) in cucumber induced earliness in flowering and fruiting, least days for flowering, fruit setting, maturity,
maximum fruit per plant, fruit length, fruit weight and yield. Eifediyi and Remison (2009) stated that the growth and yield attributes of cucumber including the vine length, number of leaves per plant, number of branches, leaf area, number of fruits per plant, fruit length, fruit girth, fruit weight per plant, fruit number per plant and total yield per hectare had increased significantly with increase in inorganic fertilizer application up to the maximum level.

Oga and Umekwe (2013) suggested that NPK fertilizer significantly affected the vine length, flowering, fruiting and marketable yield in watermelon. Arshad et al., (2014) concluded that the application of NPK as fertigation resulted in early flowering, fruiting with maximum number of fruits per plant, more weight, length of fruit and higher yield in cucumber.

**Effect of organic fertilizers**

Jianming et al., (2008) reported that the highest vitamin C content, lower nitrate content in cantaloupe fruits and increased P and K mineralization was obtained by using chicken and pigeon manure composts. Clementina (2013) stated that organic manure is the best to be used as an alternative to the inorganic manure (NPK) for the production of cucurbita. Ghorbani et al., (2013) specified that the application of 20 t ha⁻¹ cattle manure with no-chemical fertilizer is an appropriate approach for organic production of summer squash which produces greater yield with high seed oil contents.

Ojo et al., (2014) stated that the use of organic fertilizer in cultivation of watermelon could be applied as an alternative to mineral fertilizer, although it was cost effective but difficult to procure and cannot substantially amends the physical delicateness of the soil. According to results of Ghasem et al., (2014) application of 14 t/h vermicompost or 50 t/h cow manure was advisable to produce more cucumber yield compared with chemical fertilizer and other treatments. Natsheh and Mousa (2014) showed that the application of compost improved the soil characteristics; increased soil productivity, organic matter content and reduced water requirements for cultivation of cucumber. Hong-mei et al., (2014) reported that application of organic fertilizer increase total production, vitamin C, protein, sugar content of cucumber fruit. Arfan-ul-Haq et al., (2015) revealed in bitter gourd that when the effect of organic materials was compared; it was evident that poultry manure produced the highest yield.

Okoli and Nweke (2015) revealed that poultry manure as organic manure and its combination is a good source of soil amendment since it influenced the growth and yield components of cucumber. Shafeek et al., (2015) described highly substantial results that organic manure at a higher level (3.2 ton/fed.) improved plant growth, fruit yield, physical and chemical characters of fruit quality of cantaloupe plants. Eifediyi et al., (2017) reported that the organic amendments were as environmentally friendly fertilizers and resulted in higher production in watermelon as compared to the inorganic amendment (NPK fertilizer) in terms of positive effects on soil structural properties. Kumar et al., (2017) reported that long term sustainability of organic nutrition in vegetable crops (tropical) depended on the quantity and quality of organic manures applied, crop yield, quality and price of the tinda produce.

**Effect of biofertilizers**

Isfahani and Besharati (2012) indicated that the use of biological fertilizers increased yield and yield contributing of cucumber. Qun et al., (2015) reported that biological organic fertilizers could improve soil enzyme
activities, adjust soil microbial community structure, improve the soil quality and fertility conditions, and hence decrease the incidence of the wax gourd wilt disease.

**Effect of organic+ inorganic fertilizers**

Mahmoud *et al.*, (2009) investigated that the combination of organic and inorganic fertilizers could increase plant growth, yield, and quality of cucumber and also increased soil fertility. It also established that composted organic wastes can be used to substitute for around 25% of chemical nitrogen fertilizers. Singh *et al.*, (2012) revealed results of three years experiment that bottle gourd responded to the application of vermicompost @ 2.5 t+50 percent RDF, which registered higher fruits yield over other nutrients combination. Audi *et al.*, (2013) indicated that application of 6.0 ton ha-1 cattle manure + 405 kg ha-1 CAN, in all cases, either in combination or alone, resulted in a significant increase in qualitative and quantitative parameters which led to higher yield in watermelon.

**Table.1 Indian input survey report for cucurbit crops**

| Crop           | Crop Area (ha) | Fertilizers used area (ha) | Chemical fertilizers (ha) | F.Y.M (ha) | Oil cakes (ha) | Other organics (ha) | Green manure (ha) |
|----------------|----------------|---------------------------|---------------------------|------------|----------------|---------------------|------------------|
| Cucumber       | 5296           |                           | 3967                      | 1917       | 104            | 189                 | 187              |
| Pumpkin        | 1818           |                           | 768                       | 700        | 57             | 36                  | 30               |
| Bottle gourd   | 356            |                           | 124                       | 51         | 21             | 25                  | 5                |
| Bitter gourd   | 1287           |                           | 354                       | 1013       | 1              | 42                  | 3                |
| Ridge gourd    | 89             |                           | 39                        | 53         | 0              | 0                   | 0                |
| Round gourd    | 798            |                           | 591                       | 96         | 0              | 0                   | 0                |
| Other gourds   | 785            |                           | 706                       | 373        | 0              | 2                   | 5                |

Source: (Anonymous, 2017a)

Anonymous (2013) concluded that in terms of the economic aspect that the application of inorganic fertilizer and organic fertilizer in watermelon gave the more convincing results. Massri and Labban (2014) showed that cows manure was proved to be superior to other types of fertilizers (organic and inorganic) in many traits of watermelon and can reduce the harmful effects of chemical fertilizers on the environment and human health.

Nagar *et al.*, (2017) indicated that application of NPK + vermicompost resulted in significant improvement in yield on account of vermicompost along with nutrients from soil particularly at later stage of crop growth might as it might have increased the rate of photosynthesis with further increased vegetative growth activities and provided more sites for translocation of photosynthizes with ultimately increased the yield in bottle gourd.

Baghel *et al.*, (2017) clearly indicated that organic manures alone or in combination with inorganic fertilizer significantly enhanced vegetative growth of bottle gourd plants and substantially improve the fruit yield of the bottle gourd cultivars. Baghel *et al.*, (2018) revealed that the plants received 100% RDF of NPK + FYM @ 10 t ha⁻¹ + Vermicompost @ 5 t ha⁻¹ + poultry manure @ 2.5 t ha⁻¹ had a beneficial effect on growth of bottle gourd and yield contributing characters.
Effect of organic + biofertilizers

Kumar et al., (2017) studied that combined application of bio-fertilizers and fertilizers had a positive effect on yield, growth and quality parameter due to addition of nutrients and saving of at least 50% of water in cucumber. Waleed et al., (2017) investigated that the organic fertilizer combined with bio-fertilizer had the best effect on plant growth parameters and availability of nutrients in the soil which was 36.3, 16.1 and 36.3 mg kg⁻¹ in N, P and K, respectively in cucumber.

Effect of biofertilizer+ inorganic fertilizers

Prasad et al., (2009) concluded that the application of inorganic nitrogen but in combination with the azotobacter+ PSB bio-fertilizers resulted in healthy and maximum yield in bitter gourd.

Saeed et al., (2015) stated that a combined application of bio-fertilizer and chemical fertilizer had significant effect in increasing yield and growth characters of cucumber.

Effect of organic + biofertilizer + inorganic fertilizers

Anjanappa et al., (2012) revealed that the plants applied with 75% RDF + 75% FYM + Azotobacter + Phospobacteria + Trichoderma resulted in earliness and higher productivity of cucumber crop.

Habibi et al., (2014) concluded that application of bio- fertilizers in combination with 50% chemical and organic fertilizers, reduced the use of chemical fertilizers and produced higher seed and fruit yield in pumpkin. Das et al., (2015) concluded that equal amount of N+ Organic sources + Azotobacter and PSB gave maximum primary branch count, fruit count, average fruit weight and fruit size in bottle gourd.

Das et al., (2015) concluded that yield and quality characters namely, total soluble solids (TSS) and ascorbic acid in bottle gourd fruit were enhanced positively due to the application of 75% N from inorganic source and 25% N from the organic source along with application of bio- fertilizer (PSB). Mohan et al., (2016) described that 60 per cent each of RDF and vermicompost along with Azotobacter, Trichoderma and PSB were found to be superior among all the combinations of organic, inorganic and bio-fertilizer sources of nutrients for characters, namely minimum number of days to 50 per cent flowering, average fruit length, fruit weight, edible fruit count and maximum edible fruit yield in cucumber. Nayak et al., (2016) stated that recommended dose of chemical fertilizer which was applied to pointed gourd in conjunction with bio-fertilizer and vermicompost in presence of lime, resulted in improvement the quality of the produce (fruits) without hampering the yield potential of the crop.

Natchathra et al., (2016) reported that application of these integrated nutrients found to have a beneficial effect on the yield of tinda in the presence of azospirillum and phosphobacteria bio- fertilizers which secreted growth promoting substances, increased soil fertility in terms of nitrogen, phosphorus and potassium elements. Natchathra et al., (2017) revealed that 75 percent of NPK along with vermicompost @ 2.5 t ha⁻¹ combined with azospirillum and phosphobacteria @ 2 kg ha⁻¹ in tinda had good potential to promote and improve growth parameters due to an effective and alternative source of macro and micronutrients in crop of tinda.

From the cited literature we may conclude that use of organic fertilizer has a great scope for increasing growth and yield of cucurbit crops. There are several crops in
cucurbitaceae family but there is no to the point conclusion about particular fertilizer on particular crop. In other words we may state that for higher and better quality there is no single fertilizer for all cucurbitaceous crops. So, it is suggested that specific experiment regarding this study should be designed for a particular crop for concrete results or for future the recommendation.

References

Akbar P I, Kumar V and Malik M F (2009) Effect of bio-organic fertilizers on the performance of cabbage under western UP condition. Ann Hort 2: 2046.

Anonymous (2013). Growth and yield performance of different watermelon (Citullus lanatus, Thunb.) varieties as affected by organic and inorganic fertilizers. Campus Research Symposium pp 1-89. Researcher - undergraduate thesis presenter, CBC-PSU Sta. Maria Campus, Sta. Maria, Pang.

Anonymous. (2017a) Horticultural Statistics at a Glance Pp. 390. Input Survey 2006-2007, Agriculture Census, Department of Agriculture, Cooperation and FW.

Arfan-ul-Haq M, Ahmad N, Farooq U, Zafer H and Abd-Ali M (2015) Effect of different organic materials and chemical fertilizer on yield and quality of bitter gourd (Momordica charantia L.). Soil Environ 34: 142-147.

Arshad I, Ali W and Khan Z A (2014) Effect of different levels of NPK fertilizers on the growth and yield of greenhouse cucumber (Cucumis sativus L.) by using drip irrigation technology. International Journal of Research1: 650-660.

Audi W, AguyohJ N and Gao-Qiong L (2013) Yield and Quality of Watermelon as affected by Organic and Inorganic Nitrogen Sources. Asian Journal of Agriculture and Food Sciences 1:180.

Baghel S S, Bose U S, Singh R and Singh S (2018) Influence of Organic Manure with Inorganic and Bio-Fertilizer on Growth, Flowering, Yield and Yield Attributes of Bottle Gourd (Lagenaria siceraria L.). Bull Env Pharmacol Life Sci 7: 30-36.

Baghel S S, Bose U S and Singh S S (2017) Impact of Different Organic and Inorganic Fertilizers on Sustainable Production of Bottle Gourd (Lagenaria siceraria L.). Int J Pure App Biosci 5:1089-1094.

Clementina U (2013). The Impact of Organic and Inorganic Manure on the Cultivation of Pumpkin (Cucurbita maxima). Journal of Pharmacy and Biological Sciences8:18-20.

Das R, Mandal A R, Priya A, Das S P and Kabiraj J (2015) Evaluation of integrated nutrient management on the performance of bottle gourd [Lagenaria siceraria (Molina) Standl.]. Journal of Applied and Natural Science 7:18-25.

Das R, Mandal A R, Das S P and Kabiraj J (2015) Evaluation of integrated nutrient management on the performance of bottle gourd [Lagenaria siceraria (Molina) Standl.]. Journal of Applied and Natural Science 7: 18-25.

De Mello MLS, Bora PS, Narain N (2001) Fatty and amino acids composition of melon (Cucumis melo var. saccharinus) seeds. J Food Comp Anal14: 69-74.

De Mello MLS, Narain N, Bora PS (2000) Characterisation of some nutritional constituents of melon (Cucumis melo hybrid AF-522) seeds. Food Chem 68: 411-414.

Eifediyi E K and Remison S U (2009) The effects of inorganic fertilizer on the yield of two varieties of cucumber (Cucumis sativus L.). Report and Opinion 1:74-80.

Eifediyi E K, Remison S U, Ahamefule H E,
Azeez K O, Fesobi P O (2017) Performance of watermelon (Citrullus lanatus L.) in response to organic and NPK fertilizers. Acta Universitatis Sapientiae Agriculture and Environment 9: 5–175.

Ghasem S, Morteza A S, Maryam T (2014) Effect of organic fertilizers on cucumber (Cucumis sativus) yield. International Journal of Agriculture and Crop Sciences 7: 808-814.

Ghorbani R, Jahan M, Koocheki A, Nassiri M and Salari M D (2013) The effects of manure application and branch management methods on some agro ecological aspects of summer squash (Cucurbita pepo L.) in a low input cropping system. International Journal of Agricultural Sciences 3: 428-434.

Habibi A, Heidari G, Sohrabi Y and Badakhshan H (2014) Effect of Different Fertilization Systems on Yield and Seed Mineral Elements of Pumpkin. Iran Agricultural Research 33(2).

Hong-mei Z, Hai-jun J, Xiao-tao D and Ting H (2014) Effects of application of organic and inorganic fertilizers on the growth, yield quality of cucumber in greenhouse. J of P N and Fertilizer. Pp. 247-253.

IPGRI (2002) Neglected and underutilized plant species: strategic action plan of the International Plant Genetic Resources Institute (IPGRI), Rome: IPGRI.

Isfahani F M and Besharati H (2012) Effect of bio- fertilizers on yield and yield components of cucumber. Journal of Biology and Earth Sciences 2:83-92.

Jianming L, Putea W, Behboudianc M H, Zhonghongd W and Mortonc A (2008) Response of cantaloupe to cattle or sheep manure compost mixed with sandy soil. J Organic Sys 3:261-269.

Jilani M S, Bakar A, Waseem K A and Kiran M (2009) Effect of different levels of NPK on the growth and yield of cucumber (Cucumis sativus L.) under the plastic tunnel. Journal of Agriculture and Social Science 5: 99-101.

Kumar P T, BonnyB P, Midhila R, John R, Divya M R, Roch C V (2017) Effect of organic and inorganic nutrient sources on the yield of selected tropical vegetables. Scientia Horticulturae 224: 84-92.

Kumar S, Datt N, Sandal S K and Sharma S K (2017) Effect of cow urine and Bio- Fertilizers based fertigation schedule at varying levels of drip Irrigation on yield, growth, quality parameters and economics of cucumber under protected condition. International Journal of Current Microbiology and Applied Sciences 6:1242-1249.

Mahmoud E, Abd EL- Kader N, Robin P, Akkal-Corfini N and Abd El-Rahman L (2009) Effects of Different Organic and Inorganic Fertilizers on Cucumber Yield and Some Soil Properties. World Journal of Agricultural Sciences 5: 408-414.

Massri M and Labban L (2014) Comparison of different types of fertilizers on growth, yield and quality properties of watermelon (Citrullus lanatus). Agricultural Sciences 5(6).

Mohan L, Singh B K, Singh A K, Moharana D P, Kumar H and Mahapatra A S (2016) Effect of integrated nutrient management on growth and yield attributes of cucumber (Cucumis sativus L.) cv. Swarna Ageti under polyhouse conditions. The bioscan 12:305-308.

Nagar M, Soni A K and Sarolia D K (2017) Effect of organic manures and different levels of npk on growth and yield of bottle gourd [Lagenaria siceraria (Mol.) Standl.]. Int J Curr Microbiol App Sci 6:1776-1780.
Natchathra V U, Anuja S and Haripriya K (2017) Effect of organic manures and inorganic fertilizers on growth parameters in tinda (Praecitrullus fistulous). International Journal of Agriculture Sciences 13:43-45.

Natchathra V U, Anuja S, and Haripriya K (2016) Effect of organic manures and inorganic fertilizers on fruit yield of tinda (Praecitrullus fistulosus). Asian J Hort 11: 408-410.

Natsheh B, S Mousa (2014) Effect of organic and inorganic fertilizers application on soil and cucumber (Cucumis Sativa L.) Plant Productivity. International Journal of Agriculture and Forestry 4: 166-170.

Nayak D A, Pradhan M, Mohanty S, Parida A K and Mahapatra P (2016) Effect of integrated nutrient management on productivity and profitability of pointed gourd (Trichosanthes dioica Roxb.). Journal of Crop and Weed 12: 25-31.

Oga I O and Umekwe P N (2013) Effects of NPK fertilizer and staking methods on the growth and yield of watermelon (Citrus lanatus L.). International Journal of Science and Research 23: 19-64.

Ojo J A, Olowoake A A, Obembe A (2014) Efficacy of organomineral fertilizer and un-amended compost on the growth and yield of watermelon (Citrus lanatus Thumb) in Ilorin Southern Guinea Savanna zone of Nigeria. Int J Recycl Org Waste Agriculture 3: 121-125.

Okoli P S O and Nweke I A (2015) Effect of poultry manure and mineral fertilizer on the growth performance and quality of cucumber fruits. Journal of Experimental Biology and Agricultural Sciences 3:362-367.

Qun C, Juan D W, Feng Z L, Feng L X, Ying L, Xing L H (2015) Effects of biological organic fertilizer on wax gourd wilt disease, microorganism and enzyme activities in soil. Journal of South China Agricultural University 36: 36-42.

Rai M, Pandey S, Kumar S (2008) Cucurbit research in India: a retrospect. Indian Institute of Vegetable Research, publication, Vranasi, Pp. 285-293.

Rajasree R S, Sibi P I, Francis F, William H (2016) Phytochemicals of Cucurbitaceae Family – A Review. International Journal of Pharmacognosy and Phytochemical Research 8: 113-123.

Sanjur OI, Piperno DR, Andres TC, Wessel-Beaver L (2002) Phylogenetic relationships among domesticated and wild species of Cucurbita (Cucurbitaceae) inferred from a mitochondrial gene: implications for crop plant evolution and areas of origin. Proc Natl Acad Sci 99: 535-540.

Shafeek M R, Shaheen A M, Abd El-Samad E H, Rizk F A and Abd El-Al F S (2015) Response of Growth, Yield and Fruit Quality of Cantaloupe Plants (Cucumis melo L.) to Organic and Mineral Fertilization. Middle East Journal of Applied Sciences 5: 76-82.

Singh D P, Mishra U C, Prakash H G and Mishra O (2012) Role of organic farming on yield and economics of bottle gourd after vegetable pea. International Journal of Agricultural Sciences 8: 165-167.

Song C, Xiao-ri H, Guo-yuan Z (2006) Effect of different rate of organic fertilizer on growth of cucumber and its nutrients uptake. Acta Agriculturae Boreali-Sinica 21: 125-128.

Thoennissen, N H, Iwansk G B, Doa N B, Okamoto, Lin P, Abbassi S, Song J H, Yin D, Toh M, Xie W D, Said J W and Koeffler H P (2009) Cucurbitacin B induces apoptosis by inhibition of the JAS/STAT pathway and potentials antiproliferative effects of gemcitabime.
on pancreatic cancer cells. Cancer Research, 69: 5876.
Umamaheshwarappa P, Nachegowda V and Murthy P V (2005) Uptake of nitrogen, phosphorous, potassium and fruit size of cucumber Cv. Poinsette as influenced by different levels of NPK fertilizers. *Karnataka Journal of Horticulture* 1: 76-80.
Waleed F. Hassan Iman Q. Mohammed (2017) Effect of bio-organic fertilization in some nutrients availability, growth and yield of cucumber (*Cucumis sativus* L.). *Journal of Agriculture and Veterinary Science* 10: 13-17.
Xue-lin Z, Jin-long C A I, Hong-wei F A N, Tian-jie L I N, Li-ying Y A O (2007) Effects of organic and inorganic fertilizer on the growth, leaf nutrient and fruit quality of watermelon grown under protected cultivation. *J China Cucurbits and Vegetable* 4.

**How to cite this article:**

Jyoti, Lovpreet Singh and Jatinder Singh. 2019. Use of Different Types of Fertilizers in Cucurbitaceae Family. *Int.J.Curr.Microbiol.App.Sci.* 8(06): 1877-1885. doi: [https://doi.org/10.20546/ijcemas.2019.806.225](https://doi.org/10.20546/ijcemas.2019.806.225)