**Ain Shams University**
**Faculty of Agriculture**
**Department of Horticulture**

**جامعة عين شمس**
**كليـــة الزراعـــة**
**قسم البساتين**

# CURRICULUM VITAE

**Name:** Sabry Mousa Soliman Youssef Mehana.

**Position:** Full Professor of Horticulture Department, Agriculture Faculty, Ain Shams University, Egypt.

**Nationality:** Egyptian.

**Date of Birth:** 23th of January 1970.

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**Home:** 6 Badawi Asaker street, Madina El-Reyad, El-Amerya, Cairo, Egypt.

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## Education and academic Background

| | |
|---|---|
| **1992** | B.Sc. in Agriculture, Horticulture Dept., Ain Shams Univ.(Excellent with Honor Degree). |
| **1997** | M.Sc. in Vegetable crops, Horticulture Dept., Ain Shams Univ. |
| **2001** | Diploma of Specialized Post-Graduate Studies in Plant Breeding, CIHEAM – Mediterranean Agronomic Institute of Zaragoza (IAMZ). |
| **2005** | Master of Science in Plant Breeding, International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) (*Cum maxima laude*). |
| **2006** | Ph.D. in Vegetable crops, Horticulture Dept., Ain Shams Univ. |
| **2007** | Ph.D. in Sciences, Plant Biology Dept., Málaga Univ., Spain (*Sobresaliente, Cum laude*). |

## Field of research

1- Plant breeding.
2- Biotechnology (Tissue culture, Molecular biology and genetic transformation).
3- Plant physiology.
4- Plant production.

## Employment

**1992 – 1997** Demonstrator in Horticulture Dept., Agriculture Faculty, Ain Shams Univ. (Egypt).

**1997–2006** Assistant Lecturer in Horticulture Dept., Agriculture Faculty, Ain Shams Univ. (Egypt).

**2006-2011** Assistant Professor in Horticulteal Dept., Agriculture Faculty, Ain Shams Univ. (Egypt).

**2011 -2018** Associate Professor in Horticulture Dept., Agriculture Faculty, Ain Shams Univ. (Egypt).

**2018 until now** Professor in Horticulture Dept., Agriculture Faculty, Ain Shams Univ. (Egypt).

**2021 until 2024** Head of Horticulture Dept., Agriculture Faculty, Ain Shams Univ. (Egypt).

## Fellowships, Scholarships, Workshops and Awards

- Academic performance Awards, Ministry of Education, Egypt, 1989/1990 , 1990/1991 , 1991/1992 , 1992.
- Prize of Late Prof. Dr. Mahmoud El-Tomy (1992), Department of Horticulture, Faculty of Agriculture, Ain Shams University.
- Scholarship for advanced course of plant breeding, Mediterranean Agronomic Institute of Zaragoza (IAMZ- CIHEAM), Spain (from 1/7/200 to 18/6/2001).
- Master scholarship from Mediterranean Agronomic Institute of Zaragoza (IAMZ- CIHEAM), Spain (from 1/10/2001 to 1/10/2002).

- Doctoral fellowship from Spanish Agency for International Cooperation, Spain (from 1/10/2002 to 1/11/2005) in Plant Plant Physiology Department, Faculty of Sciences, University of Málaga, Spain.
- Postdoctoral fellowship from Spanish Agency for International Cooperation, Spain (from 1/10/2011 to 30/09/2012) in Plant Physiology Department, Faculty of Biology, University of Murcia, Spain.
- Postdoctoral fellowship from Egyptian Cultural Affairs and Missions Sector (from 16/11/2013 to 14/5/2014) in Department of Agricultural Science and Technology, Universidad Politécnica de Cartagena, Cartagena, Spain
- International Training Workshop on Modern Breeding and Cultivation Technology of Vegetables, Held on October 14$^{th}$ to November 2$^{nd}$ , 2019, in Beijing, China.
- Prize of International Publication 2022 and 2024 from Ain Shams University.
- Visiting Professor at the Department of Botany and Plant Physiology of the University of Malaga, from October 14 to November 13, 2022.
- Training course on CRISPR Application On Strawberry Plants from October 13 to 18, 2022.

**Affiliations:** The Egyptian Agriculturalists Association (1992 - Present).
The Egyptian Horticulture Society (1994 - Present).
The Egyptian Genetic Society (1994 - Present).

## Language Knowledge

**Mother Tongue:** Arabic

| Other Languages | Reading | Writing | Speaking | Certificate |
|---|---|---|---|---|
| English | Very good | Very good | Very good | Yes (TOEFL) |
| Spanish | Very good | Very good | Very good | Yes (DELE) |
| Italian | Good | Good | Good | Yes |

## Research & Development Projects

## Member of team work in the following projects

1. Strawberry and Non-Traditional Crops Improvement Project (F.A.O) (1993 - 1995).
2. Improvement of Artichoke for Exportation Project (ATUT) (1993 - 1995).
3. Group of Strawberry Activities, Agricultural Technology Utilization and Transfer Project (ATUT) (1996 - 1999).
4. Mass production of transplants and diagnosis of virus diseases in strawberry via molecular biology techniques (MERC - USAID) (March 2006 – March 2009).

## Conferences

1- The Fifth Conference of Spnish Society for Plant Tissue culture, Pamplona, Spain (from 28/6/2003 to 2/7/2003).

2- The Sixth Conference of Spnish Society for Plant Tissue culture, Córdoba, Spain (11 – 13 September 2005).

3- A workshop on National Agriculture Research Information Management System, 17-21 September 2006, ENAL with a cooperation with FAO.

4- The Second International Conference of Genetic Engineering and Its Applications, 14- 17 November 2006, Sharm El-Sheikh, South Sinai, Egypt.

5- Symposium entitled “Agriculture Wastes … Envirnmental Wealth”, February 23rd 2009. National Research Centre, Cairo, Egypt.

6- Training course on Diagnosis of Virus Diseases in Strawberry via Molecular Biology Techniques, 16-19 April 2007, Faculty of Agriculture, Ain Shams University with a cooperation with USDA.

7- The First International Conference on Organic Agriculture – Limitations and Future, Ain Shams University, Cairo, Egypt (October 11-14, 2010)

8- Symposium in Plant Breeding and Horticulture, 28th October 2010, Nematology and Biotechnology Lab, Faculty of Agriculture, Fayoum University with Swedish University of Agricultural Sciences.

9- First Annual Conference PlantEngine 1: Current state and vision for the future in Murcia, Spain 17-18 November 2011.

10- Fruit tree cultivation and breeding in Egypt: Challenges and opportunities for a sustainble tomorrow, Egypt 22-23 June 2025.

## Teaching

- **Under-graduate courses:**

Breeding and improvement of horticultural crops.

Production of vegetable crops (A).

Production of vegetable crops (B).

Production of vegetable seeds.

- **Post-graduate courses:**

Breeding for stress conditions.

Breeding of vegetable crops.

Taxonomy of vegetable crops.

Production of vegetable crops (onion crops).

Organic agriculture of horticultural crops.

Tisse culture and its applications

Preparation and writing of scientific papers.

## Publications

1. **Youssef, S.M. (1997).** Studies on intervarietal crosses and hybrid vigor in tomato. Thesis of Master of Science in Agriculture (Vegetable Crops), Ain Shams University, Agriculture Faculty, Egypt.

2. **S.M. Youssef, S. Jiménez-Bermúdez, M.L. Bellido, J. Muñoz-Blanco, J.L. Caballero-Repullo, F. Pliego-Alfaro, M.A. Quesada-Felice y J.A. Mercado-Carmona (2003).** Evaluación agronómica de dos clones de fresa transformados con un gen de pectato liasa en sentido. Pagina 34 del Libro de Resúmenes de la V Reunión de la Sociedad Española de Cultivo In Vitro de Tejidos Vegetales, 28/6 – 2/7 / 2003, Pamplona, España (Agronomical evaluation of two clons of strawberry transformed with an antisense of a pectate lyase gene).

3. **S. Jiménez-Bermúdez, S.M. Youssef, M. Barceló-Muñoz, J. Muñoz-Blanco, J.L. Caballero-Repullo, L. Trainotti, G. Casadoro, F. Pliego-Alfaro, M.A. Quesada-Felice y J.A. Mercado-Carmona (2003).** Efecto de los genes pectato liasa y celulasa, en expresión antisentido, en la modificación del ablandamiento del fruto de fresa. Pagina 32 del Libro de Resúmenes de la V Reunión de la Sociedad Española de Cultivo In Vitro de Tejidos Vegetales, 28/6 – 2/7 / 2003, Pamplona, España. (Effect of pectate lyase and cellulase genes, in antisense expresión, in the modification of fruit softening in strawberry).
4. **Youssef, S.M. (2005).** Regeneration and transformation of strawberry (*Fragaria* x *ananassa* Duch.) with genes modifying fruit texture. Thesis of Master of Science in Plant Breeding, International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM).
5. **S. Jiménez-Bermúdez, S.M. Youssef, J.A. Garcia-Gago, M.L. Bellido, J.L. Caballero, J. Muñoz-Blanco, M. Barceló-Muñoz, M.A. Quesada, F. Pliego-Alfaro y J.A. Mercado (2005).** Efecto de la inhibición del gen de poligalacturonasa en el proceso de reblandecimiento del fruto de fresa. . Pagina 103 del Libro de Resúmenes de la VI Reunión de la Sociedad Española de Cultivo In Vitro de Tejidos Vegetales, 11-13 Septiembre, Córdoba, España. (Effect of the inhibition of a polygalacturonase gene in fruit softening process in strawberry).
6. **Youssef, S.M. (2006).** Studies on the inheritance of some economic characters in strawberry hybrids. Thesis, Ph.D. in Agricultural Science (Vegetable Crops), Ain Shams University, Agriculture Faculty, Egypt.
7. **Youssef, S.M. (2007).** Mejora biotechnológica de fresa: Transformación con genes que modifican las características del fruto. Thesis, Ph.D. Sciences (Plant Physiology), Plant Biology Dept., Faculty of Sciences, Malaga University, Spain.
8. **Youssef, S.M., M.E. Ragab, H.M. Gomaa, V. Valpuesta, J.M. López-Aranda, M.A. Quesada, F. Pliego-Alfaro and J.A. Mercado (2006).** Strawberry transformation with antisense cellulase and pectate lyase genes: effects on production and fruit firmness. The Second International Conference of Genetic Engineering and Its Applications, 14- 17 November 2006: 199-207, Sharm El-Sheikh, South Sinai, Egypt.
9. **García-Gago, J.A., S.M. Youssef, J. Muñoz-Blanco, J.L. Caballero, J.M. López-Aranda, F. Pliego-Alfaro, M.A. Quesada and J.A. Mercado (2007).** Cotransformación de fresa con los genes de pectatoliasa y poligalacturonasa en antisentido. Pagina del

Libro de Resúmenes de la VII Reunión de la Sociedad Española de Cultivo In Vitro de Tejidos Vegetales, 25-27 de Junio de 2007, Alcalá de Henares, Madrid, España. (Co-transformation of strawberry with pectate lyase and polygalacturonase genes).

10. **Quesada M.A., Posé S., Santiago-Domenech N., Sesmero R., Molina M.C., Mousa S., Pliego-Alfaro F., Mercado J.A., Caballero J.L., Muñoz-Blanco J., Trainotti L., Casadoro G., García Gago J.A. and Lopez-Aranda J.M. (2008).** Effect of silencing of cell wall degrading enzymes on strawberry fruit textura. VI International Strawberry Symposium ISHS, Huelva, Spain, 3-7 March, 2008.
11. **Ragab, M.E. and S.M. Youssef (2008).** Technologies of Protected Cultivation. (Book in Arabic), Faculty of Agriculture, Ain Shams University. ISSN 977-237-354-8, pp 201
12. **Youssef, S.M., S. Jiménez-Bermúdez, M.L. Bellido, C.M. Pizarro, M. Barcelo, S.A. Abdal-Aziz, J.L Caballero, J.M. López-Aranda, F. Pliego-Alfaro, J. Muñoz, M.A. Quesada and J.A. Mercado (2009).** Fruit yield and quality of strawberry plants transformed with a fruit specific strawberry pectate lyase gene. **Scientia Horticulturae, 119: 120 – 125. DOI: 10.1016/j.scienta.2008.07.011**
http://www.sciencedirect.com/science/article/pii/S0304423808002732
13. **M.A. Quesada, S. Posé, N. Santiago- Doménech, R. Sesmero, M.C. Molina, S. Mousa, F. Pliego- Alfaro, J.A. Mercado J.A. García-Gago, J.M. López-Aranda, J.L. Caballero, Muñoz-Blanco, L. Trainotti and G. Casadoro (2009).** Effect of silencing of cell wall degrading enzymes on strawberry fruit texture. **Acta Horticulturae, 842: 931-934. DOI: 10.17660/ActaHortic.2009.842.206**
http://www.actahort.org/books/842/842_206.htm
14. **Ragab, M., K. El-Dougdoug, S. Mousa, A. Attia, I. Sobolev, S. Spiegel, S. Freeman, M. Zeidan, I.E. Tzanetakis, and R.R. Martin (2009).** Detection of strawberry viruses in Egypt. **Acta Hortic., 842: 319-322, DOI: 10.17660/ActaHortic.2009.842.58**
http://www.actahort.org/books/842/842_58.htm
15. **Abd- Ellatif, A.A., A.E. Shehata and S.M. Youssef (2010).** Effect of planting date and intra-row spacing on growth, yield and quality of taro. **Research Journal of Agriculture and Biological Sciences, 6 (6): 806-813.**
http://www.aensiweb.net/AENSIWEB/rjabs/rjabs/2010/806-814.pdf

16. **Ragab, M.E., A.E. Omran, S.M. Youssef and W.M. Sabt (2010).** Effect of some foliar applications and agricultural practices on runner formation and transplant production in strawberry nurseries. **J. Biol. Chem. Environ. Sci., 5 (4): 247-261.**
17. **Abdallah, M.M.F., S.M.S. Youssef, M.F.Z. Emara and E.M.R. Ibrahim (2011).** Environmental and nutritional safe production of sunflower green sprouts in house. **J. Environ. Sci., 19 (3): 95-117.**
18. **Ragab, M.E., S.M. Youssef, M.K. Ali, S.M. Nasr and Hoda E.A. Ibrahim (2011).** Strawberry intercropping with some vegetables for economic productivity. **J. Biol. Chem. Environ. Sci., 6 (1): 257-276.**
19. **Youssef, S.M. (2011).** Heterosis and combining ability analysis for growth, flowering and fruit yield characters in okra. **J. Biol. Chem. Enviro. Sci., 6 (2): 237-250.**
20. **Sabry M. Youssef, Iraida Amaya, José M. López-Aranda, Rafael Sesmero, Victoriano Valpuesta, Giorgio Casadoro, Rosario Blanco-Portales, Fernando Pliego-Alfaro, Miguel A. Quesada, José A. Mercado (2013).** Effect of simultaneous down-regulation of pectate lyase and endo-β-1,4-glucanase genes on strawberry fruit softening. Molecular Breeding, 31: 313-322, Doi: 10.1007/s11032-012-9791-y.
https://link.springer.com/content/pdf/10.1007%2Fs11032-012-9791-y.pdf
21. **Metwally, A.A., S.M. Youssef, S.M. El-Miniawy and M.E. Ragab (2013).** Effect of foliar spraying of salicylic acid on growth, yield and quality of cold stored strawberry plants. **J. Biol. Chem. Environ. Sci., 8 (1): 1-17.**
22. **El-Miniawy, S.M., M.E. Ragab, S.M. Youssef and A.A. Metwally (2013).** Response of strawberry plants to foliar spraying of chitosan. **Research Journal of Agriculture and Biological Sciences, 9(6): 366-372.**
http://www.aensiweb.net/AENSIWEB/rjabs/rjabs/2013/366-372.pdf
23. **Sabater-Jara, A.B., S. Souliman-Youssef, E. Novo-Uzal, L. Almagro, S. Belchí-Navarro, M.A. Pedreño (2013).** Biotechnological approaches to enhance the biosynthesis of ginkgolides and bilobalide in *Ginkgo biloba*. **Phytochem. Rev., 12:191-205, DOI 10.1007/s11101-013-9275-7.**
https://link.springer.com/content/pdf/10.1007/s11101-013-9275-7.pdf
24. **Sabater-Jara, AB, Almagro L, Belchí-Navarro S, Martínez-Esteso MJ, Youssef SM, Casado-Vela J, Vera-Urbina JC, Sellés-Marchart S, Bru-Martínez R, Pedreño MA.**

**(2014).** Suspension-cultured plant cells as a tool to analyze the extracellular proteome. **Methods Mol. Biol., 1072:407-33. doi: 10.1007/978-1-62703-631-3_29.**
https://link.springer.com/content/pdf/10.1007%2F978-1-62703-631-3_29.pdf

25. **Sabater-Jara, A.B., L. Almagro, S. Belchí-Navarro, M.J. Martínez-Esteso, S.M. Youssef, J. Casado-Vela, J.C. Vera-Urbina, S. Sellés-Marchart, R. Bru-Martínez, M.A. Pedreño (2014).** Plant cell cultures as a tool to analyze the extracellular proteome. Chapter in In book: Plant Proteomics: Methods and Protocols, Edition: 2nd ed., Publisher: New York, Humana Press, Editors: Jorrin-Novo J.V., S. Komatsu, W. Weckwreth, S. Wienkoop, pp.100-125.
26. **El-Miniawy, S.M., M.E. Ragab, S.M. Youssef and A.A. Metwally (2014).** Influence of foliar spraying of seaweed extract on growth, yield and quality of strawberry plants. **Journal of Applied Sciences Research, 10 (2): 88-94.**
http://www.aensiweb.com/old/jasr/jasr/2014/88-94.pdf
27. **Ragab, M.E., S.M. Youssef, S.M. Nasr, H.A. Al-arabi (2014).** Intercropping with some vegetables for economic productivity. **Acta Hortic., 1049: 503-508. DOI: 10.17660/ActaHortic.2014.1049.74**
http://www.actahort.org/books/1049/1049_74.htm
28. **M.A.F.A El-Tahawey, A.M. Kandeel , S.M.S. Youssef, M.M.M. Abd El-Salam (2015).** Heterosis, potence ratio, combining ability and correlation of some economic traits in diallel crosses of pumpkins. **Egyptian Journal of Plant Breeding, 19 (2):419-439.**
29. **Nashwa A.I. Abu El-Azm and S.M.S. Youssef (2015).** Spraying potassium silicate and sugar beet molasses on tomato plants minimizes transpiration, relieves drought stress and rationalizes water use. **Middle East Journal of Agriculture Research, 4 (4): 1047-1064.**
http://www.curresweb.com/mejar/mejar/2015/1047-1064.pdf
30. **Sabry M. Youssef (2016).** Chitosan and thidiazuron improve regeneration efficiency of strawberry (*Fragaria* x *ananassa* Duch.) cv. Festival from different explant types. **Middle East Journal of Agriculture Research, 5 (4): 856-867.**
http://www.curresweb.com/mejar/mejar/2016/856-867.pdf
31. **S.M.S. Youssef, S.A. Abd El-Hady, Nashwa A.I. Abu El-Azm, M.Z. El-Shinawy (2017).** Foliar application of salicylic acid and calcium chloride enhances growth and productivity of lettuce (*Lactuca sativa*). **Egyptian Journal of Horticulture, 44 (1): 1-16**.

**DOI: 10.21608/EJOH.2017.892.1000**
**http://ejoh.journals.ekb.eg/article_3666_cfa982d1cf695bcf4a9d1c6eef7a28d0.pdf**

32. **S.M.S. Youssef, Nashwa A.I. Abu El-Azm, S.A. Abd El-Hady (2017).** Frequent foliar sprayings of salicylic acid with elevated concentrations enhance growth, yield and fruit quality of strawberry (*Fragaria x ananassa* Duch. cv. Festival) plants. **Egyptian Journal of Horticulture, 44 (1): 61-74. DOI: 10.21608/EJOH.2017.1100.1008**
**http://ejoh.journals.ekb.eg/article_3669_9dc2761ee26526ac70b32c6d96fb1576.pdf**
33. **Sabry M. Youssef, Gamal S. Riad, Salama A. Abd Elhady (2017).** Effect of phosphorus sources and arbuscular mycorrhizal inoculation on growth and productivity of snap bean (*Phaseolus vulgaris* L.). **Gesunde Pflanzen, 69: 139-148. DOI 10.1007/s10343-017-0398-4**
**https://link.springer.com/content/pdf/10.1007%2Fs10343-017-0398-4.pdf**
34. **Sabry M. Youssef, Salama A. Abd Elhady, Rasha M. Aref, Gamal S. Riad (2018).** Salicylic acid attenuates the adverse effects of salinity on growth and yield and enhances peroxidase isozymes expression more competently than proline and glycine betaine in cucumber plants. **Gesunde Pflanzen, 70 (2): 75-90. DOI 10.1007/s10343-017-0413-9**
**https://link.springer.com/article/10.1007/s10343-017-0413-9**
35. **Metwally A.A., M.E. Ragab, S.M. El-Miniawy, S.M. Youssef and Manal Mubarak (2018).** Optimal requirements of nitrogen and phosphorus fertilization rates for strawberry nurseries. **Arab Univ. J. Agric. Sci. 26 (3), 951-969.**
36. **Gamal S. Riad, Sabry M. Youssef, Nashwa A.I. Abu El-Azm, Enas M. Ahmed (2018).** Amending sandy soil with biochar or/and superabsorbent polymer mitigates the adverse effects of drought stress on green pea. **Egyptian Journal of Horticulture, 45 (1): 169-183. DOI: 10.21608/EJOH.2018.3860.1067**
**http://www.ejoh.journals.ekb.eg/article_7567_75fc37e72142cf898c141435e0bd580e.pdf**
37. **Heba M.A. Khater, M.E. Ragab, S.M. Youssef, Asmaa R. Mahmoud (2019).** Effect of different nitrogen fertilizer rates and sources on vegetative growth and yield of quinoa plant as a newly leafy vegetable crop. **HortScience Journal of Suez Canal University, 7 (2), 73-80.**
38. **Sabry M Youssef, Antonio López-Orenes, María A Ferrer, Antonio A Calderón (2022).** Salicylic-Acid-Regulated Antioxidant Capacity Contributes to Growth

Improvement of Okra (*Abelmoschus esculentus* cv. Red Balady). **Agronomy, 12 (1): 168-182.**

39. **Wathiq M. Hmood, Mohamed E. Raga, Sabry M. Youssef and Amr A. Metwally (2022).** Effect of Selenium and Silicon Foliar Applications on the Growth and Yield of Common Bean. **Egypt. J. Hort., 49 (2): 147-158.**
40. **Mohamed R. Wehedy, Mohamed R. Hafez, Ibrahim I. El-Oksh and Sabry M. Youssef (2023).** Synergistic Interactions of Arbuscular Mycorrhizal Fungi and Salicylic Acid Alleviate Adverse Effects of Water Salinity on Growth and Productivity of Watermelon via Enhanced Physiological and Biochemical Responses. **Egypt. J. Hort., 50 (2): 181-207.**
41. **Nora A. AbdelMotlb, Salama A. Abd El-Hady, Faten S. Abdel-all, Abdalla A. Ghoname and Sabry M. Youssef (2023).** Rhizobium Enhanced Drought Stress Tolerance in Green Bean Plants Through Improving Physiological and Biochemical Biomarkers. **Egypt. J. Hort., 50 (2): 231-245.**
42. **Yassin M. Shiba, Salama A. Abd Elhady, Sabry M. Youssef, Mohamed Z. ElShinawy (2023).** Minimizing Heavy Metal Accumulation in Edible Parts of Lettuce Plant. **Egypt. J. Hort., 50 (2): 303-317.**
43. **Sabry M Youssef, Antonio López-Orenes, María A. Ferrer, Antonio A. Calderón (2023).** Foliar application of salicylic acid enhances the endogenous antioxidant and hormone systems and attenuates the adverse effects of salt stress on growth and yield of French bean plants**. Horticulturae, 9 (1): 75.**
44. **Mohammed A. S. Hammad, Mohammed E. Ragab, Sabry M. S. Youssef and Shadia A. Ismail (2024).** Effect of Foliar Spraying of Some Plant Bio-Stimulants on Growth, Productivity and Storability of Cassava. **Egypt. J. Hort., 51 (1): 61-70.**
45. **Fatma A. Abdel-Razik, Mohamed E. Ragab, Sabry M. Youssef and Amr A. Metwally (2024).** Growth, Yield, and Tuber Quality of Potato with Foliar Application of Tryptophan and Its Derivatives**. Egypt. J. Hort., 51 (2): 161-173.**
46. **Afaf A.A. Osman, Amr A. Metwally Salama A. Abd Elhady, and Sabry M. S. Youssef (2025).** Arbuscular Mycorrhizal Fungi Improve Selenium and Cobalt Biofortification in Snap Bean**. Egypt. J. Hort., 52 (1): 41-61.**