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| Book Name: | [**Microbiology and Biotechnology Research: An Overview**](https://www.bookpi.org/bookstore/product/microbiology-and-biotechnology-research-an-overview-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_4840** |
| Title of the Manuscript:  | **A review on Asparagus plant tissue culture and biotechnology**  |
| Type of the Article | **Book Chapter** |

**Special note:**

**A research paper already published in a journal can be published as a Book Chapter in an expanded form with proper copyright approval.**

**Source Article:**

**This chapter is an extended version of the article published by the same author(s) in the following journal.**

**Horticulturae, 8(5): 1-15, 2022.**

**DOI:** [**https://doi.org/10.3390/horticulturae8050439**](https://doi.org/10.3390/horticulturae8050439)

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| PART 1: Comments |
|  | Reviewer’s comment**Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | Asparagus is a commercially and nutritionally crucial crop species. This paper reviews the studies on species diversity, micropropagation, somaclonal variation, germplasm preservation, molecular markers, breeding, genetic transformation, gene editing, and biotechnology in *Asparagus* till 2025. Such information helps address the enormous obstacles, the cultivation of this species faces, resulting from climate changes, pests and diseases, as well as enhance the quality and productivity to meet the market requirements. It provides a reference for further research into the varied aspects of *Asparagus* biology. |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | I suggest the following title: Asparagus tissue culture, molecular biology, biotechnology and improvement: A review  |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | The abstract is not comprehensive. The author has made it too concise. The background for conducting the review has to be elaborated clearly. Additionally, the current status of research on Asparagus and future requirements also need to be detailed.  |  |
| **Is the manuscript scientifically, correct? Please write here.**  | The manuscript is scientifically correct. However, the author has included several decades-old references. These need to be omitted. Additionally, new avenues of research have to be elaborated on. I have mentioned the articles in the next section, which can be included to update the review. The author needs to add more such references. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | I would suggest these additional references:Klanrit P, Lila K, Netsawang P, Siangsanor P, Thanonkeo P, Thanonkeo S. Effect of Organic Additives on the Micropropagation of Asparagus officinalis. Horticulturae. 2023; 9(11):1244. <https://doi.org/10.3390/horticulturae9111244>.Sallam, A.R., Hegazi, G.AM. & Bekheet, S.AH. Synthetic seeds for in vitro preservation of Asparagus officinalis L.. Bull Natl Res Cent 47, 72 (2023). <https://doi.org/10.1186/s42269-023-01043-8>.Gaballa, G., Shehata, S., & Marzouk, E. (2023). UTILIZING TISSUE CULTURE TECHNIQUE AND ZNO NANOPARTICLE STIMULATION TO PROPAGATE ASPARAGUS APHYALLUS L. PLANT. Sinai Journal of Applied Sciences, 12(6), 889-902. doi: 10.21608/sinjas.2023.241271.1235.Skuba, A.O., Likhanov, A.F., Butsenko, L.M. et al. Effect of the Nitrogen Source on the Synthesis of Secondary Metabolites by Suspension Culture of Medicinal Asparagus Asparagus officinalis L.. Cytol. Genet. 58, 11–20 (2024). <https://doi.org/10.3103/S0095452724010031>.Toosi, Z. , Mousavizadeh, S. J. , Mashayekhi, K. and Alizade, M. (2023). Effect of Sucrose on Direct Somatic Embryogenesis of Octoploid Asparagus. Journal Of Horticultural Science, 36(4), 829-842. doi: 10.22067/jhs.2021.70871.1061.Jinhong Yuan, Jiaojiao Yuan, Huihui Zhou, Qiaoqiao Su, Shuai Ji, Yuqing Li, Siyi Guo, Junhua Li, A cytogenetic analysis of male meiosis in Asparagus officinalis, Bioscience, Biotechnology, and Biochemistry, Volume 83, Issue 4, 3 April 2019, Pages 666–674, <https://doi.org/10.1080/09168451.2018.1562878>.Vasava D, Bhagriya AT, Sindhava NS. Extraction, Quantification and Anti-Cancer Activity of Important Secondary Metabolite “Shatavarin-IV” from in vitro Callus Culture of Asparagus racemosus Willd. Pharmacognosy Research. 2024;16(3):558-569.Yi TG, Yeoung YR, Choi I-Y, Park N-I (2019) Transcriptome analysis of Asparagus officinalis reveals genes involved in the biosynthesis of rutin and protodioscin. PLoS ONE 14(7): e0219973. <https://doi.org/10.1371/journal.pone.0219973>.M-E. Ranjbar, M., Ghahremani, Z., Mousavizadeh, S.J., Barzegar, T., Gil, J., & Moreno, R. (2022). New hybrids between cultivated and wild species of asparagus (Asparagus spp.) and their validation by SSR markers. European Journal of Horticultural Science.Madhanamohanan GC & Avarachan SE (2019). Assessment of genetic diversity of Asparagus racemosus willd. from different agro-ecological zones of Kerala using RAPD markers. Genetika. 51. 479-494. 10.2298/GENSR1902479G. Moreno R, Castro P, Die JV. Editorial: Advances in conservation, characterization, and use of asparagus genetic resources. Front Plant Sci. 2023 Nov 10;14:1332117. doi: 10.3389/fpls.2023.1332117. PMID: 38023896; PMCID: PMC10676214.Plath S, Klocke E, Nothnagel T (2022) Karyological and nuclear DNA content variation of the genus Asparagus. PLoS ONE 17(3): e0265405. <https://doi.org/10.1371/journal.pone.0265405>.Pandey, V., Dubey, S., Swami, R.K., Shri, M., Tiwari, S., Bhardwaj, A. (2023). Ex Situ Conservation of Shatavari (Asparagus racemosus). In: Mishra, M.K., Kumari, N. (eds) Plants for Immunity and Conservation Strategies. Springer, Singapore. <https://doi.org/10.1007/978-981-99-2824-8_12>.Abbasi, F., Majd, A., Farahvash, F., Nejadsattari, T., & Tarinejad, A. (2020). Synthetic seed technology for encapsulation and regrowth of in vitro-derived shoot-tips and somatic embryos of Asparagus officinalis L. Nexo Revista Científica, 33(02), 276–285. <https://doi.org/10.5377/nexo.v33i02.10767>.Yu Q, Fan L. Improving the bioactive ingredients and functions of asparagus from efficient to emerging processing technologies: A review. Food Chem. 2021 Oct 1;358:129903. doi: 10.1016/j.foodchem.2021.129903. Epub 2021 Apr 20. PMID: 33933971. |  |
| Is the language/English quality of the article suitable for scholarly communications? | No. The language requires extensive revision for a scholarly communication. |  |
| Optional/General comments | The paper seems too short for a review. More sections can be added. |  |

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| **PART 2:**  |
|  | Reviewer’s comment | Author’s comment *(if agreed with the reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?**  | *(If yes, Kindly please write down the ethical issues here in detail)* |  |

**Reviewer details:**

**Uday Kiran Avasthi, India**