technologies can further improve fruit safety and added value while reducing postharvest losses. Moreover, studies on Chinese bayberry fruits, kernels, and processing by-products have demonstrated broad application potential in functional foods and nutraceutical products, particularly due to their strong antioxidant and antidiabetic activities, which may significantly extend the industrial value chain of Chinese bayberry. In the future, further efforts are still needed to clarify the mechanisms underlying fruit quality formation, establish region- and cultivar-specific cultivation systems, and develop unified quality evaluation and grading standards linking genetic markers, laboratory detection indices, and market grades, thereby promoting the high-quality and sustainable development of the Chinese bayberry industry.

Acknowledgments

The author acknowledges GenBreed Publisher for providing editorial assistance.

Conflict of Interest Disclosure

The author affirms that this research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

References

Apostolopoulos I.D., Tzani M.A., and Aznaouridis S.I., 2023, A general machine learning model for assessing fruit quality using deep image features, AI, 4(4): 812-830.
https://doi.org/10.3390/ai4040041

Cao Y.L., Jia H.M., Xing M.Y., Jin R., Grierson D., Gao Z.S., Sun C.D., Chen K.S., Xu C.J., and Li X., 2021, Genome-wide analysis of *MYB* gene family in Chinese bayberry (*Morella rubra*) and identification of members regulating flavonoid biosynthesis, Frontiers in Plant Science, 12: 691384.
https://doi.org/10.3389/fpls.2021.691384

Chen Y.C., Xiang L., Li F., Chang Y.J., Yu H.G., Zhang J., and Xie Z.L., 2025, The appropriate reduction of nitrogen fertilization enhances soil quality without compromising fruit yield and quality in a bayberry orchard, Polish Journal of Environmental Studies, 35(3): 3537-3549.
https://doi.org/10.15244/pjoes/204242

Dhiman B., Kumar Y., and Kumar M., 2022, Fruit quality evaluation using machine learning techniques: review, motivation and future perspectives, Multimedia Tools and Applications, 81: 16255-16277.
https://doi.org/10.1007/s11042-022-12652-2

Gao J.P., Zheng X.A., Jiang A.Z., Rong J., Yue W., Cao J.P., and Sun C.D., 2024, Characterization of flavor quality deterioration of postharvest Chinese bayberry (*Myrica rubra* cv. Dongkui) at different storage temperatures, Journal of Food Composition and Analysis, 130: 106146.
https://doi.org/10.1016/j.jfca.2024.106146

Hassan E., Ghazalah S., El-Rashidy N., El-Hafeez T.A., and Shams M.Y., 2025, Sustainable deep vision systems for date fruit quality assessment using attention-enhanced deep learning models, Frontiers in Plant Science, 16: 1521508.
https://doi.org/10.3389/fpls.2025.1521508

Hong L.D., Yao Y.L., Lei C.T., Hong C.L., Zhu W.J., Zhu F.X., Wang W.P., Lu T., and Qi X.J., 2023, Declined symptoms in *Myrica rubra*: the influence of soil acidification and rhizosphere microbial communities, Scientia Horticulturae, 311: 111892.
https://doi.org/10.1016/j.scienta.2023.111892

Júnior M.S., Santos R., De Azevedo Sales L., Vargas R., Deltsidis A., and De Oliveira L.F., 2025, Image-based and ML-driven analysis for assessing blueberry fruit quality, Heliyon, 11: e42288.
https://doi.org/10.1016/j.heliyon.2025.e42288

Knott M., Pérez-Cruz F., and Defraeye T., 2023, Facilitated machine learning for image-based fruit quality assessment, Journal of Food Engineering, 345: 111401.
https://doi.org/10.1016/j.jfoodeng.2022.111401

Li C.X., Li G., Qi X.J., Yu Z.P., Abdallah Y.A.Y., Ogunyemi S.O., Zhang S.W., Ren H.Y., Mohany M., Al-Rejaie S.S., Li B., and Liu E.M., 2023, The effects of accompanying ryegrass on bayberry trees by change of soil property, rhizosphere microbial community structure, and metabolites, Plants, 12(21): 3669.
https://doi.org/10.3390/plants12213669

Liu Y., Sun D., Wang H., Wang X., Yu G., and Zhao X., 2020, An evaluation of China's agricultural green production: 1978-2017, Journal of Cleaner Production, 243: 118483.
https://doi.org/10.1016/j.jclepro.2019.118483

Mo J.L., Rashwan A.K., Osman A.I., Eletmany M.R., and Chen W., 2024, Potential of Chinese bayberry (*Myrica rubra* Sieb. et Zucc.) fruit, kernel, and pomace as promising functional ingredients for the development of food products: a comprehensive review, Food and Bioprocess Technology, 17: 3506-3524.
https://doi.org/10.1007/s11947-023-03313-9

Ren H.Y., He Y.H., Qi X.J., Zheng X.L., Zhang S.W., Yu Z.P., and Hu F.R., 2021, The bayberry database: a multiomic database for *Myrica rubra*, an important fruit tree with medicinal value, BMC Plant Biology, 21: 452.
https://doi.org/10.1186/s12870-021-03232-x