

## Abstract

# The Benefits of Applying Compost in Agriculture as *Aronia* Crops Fertilizer †

Georgica Pandelea (Voicu)<sup>1,\*</sup>, Daniela-Simina Stefan<sup>1</sup>, Mirela Florina Calinescu<sup>2</sup>,  
Ivona Cristina Enescu (Mazilu)<sup>2,3</sup> and Camelia Ungureanu<sup>4</sup>

<sup>1</sup> Analytical Chemistry and Environmental Engineering Department, Faculty of Applied Chemistry and Materials Science, University POLITEHNICA of Bucharest, 060042 București, Romania; simina\_stefan\_ro@yahoo.com

<sup>2</sup> Orchard Technology and Plant Protection Department, Research Institute for Fruit Growing Pitesti, 117450 Arges City, Romania; elacalinescu@yahoo.com (M.F.C.); icmazilu@yahoo.com (I.C.E.)

<sup>3</sup> Doctoral School of Plant and Animal Resources Engineering, Horticulture Faculty University of Craiova, 200585 Craiova, Romania

<sup>4</sup> General Chemistry Department, Faculty of Applied Chemistry and Materials Science, University POLITEHNICA of Bucharest, 060042 București, Romania; ungureanucamelia@gmail.com

\* Correspondence: voicu\_georgica@yahoo.com

† Presented at the 17th International Symposium “Priorities of Chemistry for a Sustainable Development” PRIOCHEM, Bucharest, Romania, 27–29 October 2021.

**Keywords:** chokeberries; composts; vitamin C; anthocyanins; phenolics; leaves minerals



**Citation:** Pandelea, G.; Stefan, D.-S.; Calinescu, M.F.; Enescu, I.C.; Ungureanu, C. The Benefits of Applying Compost in Agriculture as *Aronia* Crops Fertilizer. *Chem. Proc.* **2022**, *7*, 8. <https://doi.org/10.3390/chemproc2022007008>

Academic Editors: Mihaela Doni, Florin Oancea, Zina Vuluga and Radu Claudiu Fierăscu

Published: 28 February 2022

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Introduction:** This paper presents the preliminary results of a study that aims to emphasize the compost effect, when used as fertilizer, in *Aronia melanocarpa* crops [1–3]. The study was conducted at the Research Institute for Fruit Growing Pitesti-Maracineni, Arges county, Romania, during the 2019–2020 growing season on *Aronia melanocarpa* five-year-old plants. **Materials and methods:** Two different origin composts, A (in 30 and 40 t/ha doses) and M (in 20 and 40 t/ha doses), were administrated, and the results compared to those of untreated plants. Dry weight (DW), total titrable acidity (TTA), total sugar content (TSC), vitamin C (Vit. C), total phenolics, and total anthocyanins content, as quality indicators, were quantified in berries and N, P, K, Ca, Mg, Zn, Cu, Mn, and Fe levels were determined in *Aronia* leaves. **Conclusions:** As the ANOVA test results showed, in the first experimental year, the influence of compost treatments was focused on berries and less on vegetative organs (leaves). The M-40 type compost significantly increased berries DW, only if compared with A-type compost treatments, and M-20 reduced TPC and A-type fertilizer, significantly decreasing DW (A-30), TTA (A-40), Vit. C (A-40), TAC (A-40) and increasing total sugar content (A-40) in *Aronia* berries; compost application reduced the foliar content of Zn (A-30), Cu (M-40), Fe (A-40); by decreasing TPC and TAC, compost fertilization proved a helpful instrument in reducing plant abiotic stress.

**Author Contributions:** Conceptualization, C.U. and M.F.C.; methodology, M.F.C.; software, I.C.E.; validation, D.-S.S., C.U. and M.F.C.; formal analysis, G.P.; investigation, M.F.C.; G.P. and I.C.E.; resources, M.F.C.; data curation, C.U.; writing—original draft preparation, M.F.C.; D.-S.S. and C.U.; writing—review and editing, M.F.C.; D.-S.S. and C.U.; visualization, M.F.C.; G.P.; D.-S.S. and C.U.; supervision, C.U.; project administration, M.F.C. and I.C.E.; funding acquisition, M.F.C. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Aminifard, M.; Aroiee, H.; Azizi, M.; Nemati, H.; Jaafar, H. Effect of compost on antioxidant components and fruit quality of sweet pepper (*Capsicum annuum* L.). *J. Cent. Eur. Agric.* **2013**, *14*, 47–56. [[CrossRef](#)]
2. Bedada, W. Compost and Fertilizer-Alternatives or Complementary? Management Feasibility and Long-Term Effects on Soil Fertility in an Ethiopian Village. Ph.D. Thesis, Faculty of Natural Resources and Agricultural Sciences, Swedish University of Agricultural Sciences, Uppsala, Sweden, 2015; p. 123. Available online: <http://pub.epsilon.slu.se/12825> (accessed on 15 September 2021).
3. Chrubasik, C.; Li, G.; Chrubasik, S. The clinical effectiveness of chokeberry: A systematic review. *Phytother. Res.* **2010**, *24*, 1107–1114. [[CrossRef](#)] [[PubMed](#)]