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Faculty of Agriculture



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Editors in Chief

Boris Pašalić
Marinko Vekić

Technical Editors

Biljana Kelečević
Danijela Kuruzović

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Preparation and application of yarrow (*Achillea millefolium* L.) decoctions and macerates in sustainable crop production

Vladimir Filipović¹, Snežana Dimitrijević¹, Vladan Ugrenović², Vera Popović³, Ljubica Šarčević-Todosijević⁴, Jelena Golijan Pantović⁵, Violeta Mickovski-Stefanović⁶

¹ *Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia*

² *Institute of Soil Science, Belgrade, Serbia*

³ *Institute of Field and Vegetable Crops, Novi Sad, Serbia*

⁴ *High Medical - Sanitary School of Professional Studies, Belgrade, Serbia*

⁵ *Faculty of Agriculture, University of Belgrade, Belgrade, Serbia*

⁶ *Tamiš Research and Development Institute, Pančevo, Serbia*

Corresponding author: Vladimir Filipović, vladimir.filipovic@imsi.bg.ac.rs

Abstract

Yarrow (*Achillea millefolium* L.) is a multifunctional plant widely used in sustainable and organic agriculture. It serves as a soil cover (mulch), a compost activator, and a component of ecological corridors or flowering belts, enhancing biodiversity and crop protection. Its bioactive compounds confer antifungal and insecticidal properties, making it effective against powdery mildew, rust, aphids, thrips, and onion flies. Two primary preparations are commonly employed in crop management: decoctions and macerates. Yarrow decoction is produced from dried aboveground plant parts harvested during flowering. Eight hundred grams of herb are ground and boiled in 10 liters of water for 30 minutes. The hot decoction is filtered into a well-sealed container and, prior to foliar application, supplemented with 40 g of homemade soap per 10 liters to improve adhesion. This preparation provides preventive and curative control of various fungal pathogens and insect pests. Yarrow macerate is obtained by soaking 200 g of dried flowering herb in 10 liters of water for 24 hours. After filtration, it is diluted 1:10 with water before application. When combined with garlic tea, this macerate effectively suppresses soil-dwelling pests such as wireworms and cockchafers (*Melolontha* spp.) through targeted spraying between plant rows. The scientific significance of these plant-based preparations lies in their dual role as biostimulants and biocontrol agents. Their application improves soil biological activity and fertility, strengthens plant resistance, and reduces reliance on synthetic agrochemicals. Furthermore, utilizing underexploited plant biomass aligns with circular and agroecological approaches, promoting sustainability and environmental stewardship in crop production systems.

Key words: yarrow, *Achillea millefolium*, plant-based preparations, organic agriculture, biocontrol agents

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