

Cow Urine's Agricultural Renaissance: Enhancing Crop Yield and Environmental Sustainability

Umesh S. Bhoi¹, Rohit H. Patil¹, Sunil H. Koli², Jamatsing D. Rajput¹, 

1. Department of Chemistry, B. P. Arts, S.M.A. Science, K.K.C. Commerce College, Chalisgaon, IND

2. Department of Microbiology, Yashwantrao Chavan College of Science, Karad, IND

Received: June 21, 2026 | Review began: July 08, 2026 | Review ended: August 01, 2026 | Published: August 31, 2026

© Copyright 2026

This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

In recent decades, global awareness of the need to conserve the natural environment and safeguard food integrity has increased markedly, leading to renewed interest in organic and low-input farming systems. Cow urine is a distinctive organic resource that is easily accessible on dairy farms and has been used as a fertilizer, plant growth booster, and natural pesticide in agriculture. It is mostly water ($\approx 95\%$) and contains urea, mineral salts, hormones, and enzymes that can supply nutrients and bioactive compounds to crops. Experimental studies indicate that cow urine and cow urine-based formulations may improve certain growth parameters, enhance yield components, and suppress selected pests and pathogens under specific conditions. However, the evidence base remains fragmented and context-dependent, as many reports are small scale, short term, or combine cow urine with other inputs, making it difficult to isolate its independent effects or generalize across crops and environments. In addition, variability in cow urine composition, limited standardization of formulations, and the scarcity of large, replicated field trials constrain robust conclusions about its agronomic efficiency relative to conventional fertilizers and pesticides. This review summarizes reported uses of cow urine and cow urine-based formulations in agricultural practices, critically evaluates their benefits and limitations.

Categories: Organic agriculture, Disease & pests of crops, Use of biostimulants, biofertilizers, bioinoculants in sustainable agriculture

Keywords: organic farming, cow urine, biopesticide, plant growth stimulant, fertilizer

Introduction And Background

Most Indians depend on agriculture for their livelihood, which is currently facing numerous challenges, such as soil degradation, high cost of chemical pesticides, pesticide resistance, low crop yield, and high production costs. According to the UNFPA World Population Dashboard, in 2025, India's population was approximately 1.464 billion, due to this growing population, the demand for food is rising rapidly compared to its production [1]. To meet the food demand of the growing population, agricultural practices must be modified accordingly. In Indian agriculture, synthetic pesticides are widely used for pest management to enhance crop yield because of their immediate knockdown effect. However, the excessive use of this pesticide has led to environmental pollution, the development of pesticide-resistant pests, and health hazards [2].

The widespread use of synthetic agrochemicals has negatively affected the environment, human health, and biodiversity. Although these synthetic agrochemicals effectively control pests, they cause environmental damage, soil degradation, water pollution, and resistance development in pests, posing significant challenges to sustainable agriculture [3,4]. Therefore, there is increasing interest in safer and eco-friendly solutions that can overcome the negative impact of synthetic agrochemicals while maintaining productivity. In this case, organic farming may become a promising

How to cite this article:

Bhoi U S, Patil R H, Koli S H, et al. (August 31, 2026) Cow Urine's Agricultural Renaissance: Enhancing Crop Yield and Environmental Sustainability. Cureus J. Agri. Food Sci 2 : es44497-026-00252-z. DOI <https://doi.org/10.7759/s44497-026-00252-z>