

**DIVERSE ORIGINS AND CHARACTERISTICS OF WEEDY RICE: A  
GLOBAL PERSPECTIVE THROUGH SYSTEMATIC REVIEW AND  
BIBLIOMETRIC ANALYSIS**



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## ABSTRACT

Weedy rice, a significant agricultural challenge, exhibits diverse origins and characteristics that vary globally. This systematic review explores the genetic, ecological, and evolutionary aspects of weedy rice, highlighting its complex relationship with cultivated rice (*Oryza sativa*). By examining weedy rice populations from different regions, we uncover the multiple pathways through which weedy rice evolves, including de-domestication, hybridization, and gene flow from wild relatives. The findings reveal distinct morphological and physiological traits that enable weedy rice to thrive in various environments, often outcompeting cultivated rice and leading to substantial yield losses. Understanding these diverse origins and characteristics is crucial for developing effective management strategies and mitigating the impact of weedy rice on global rice production. For the systematic review and bibliometric analysis, 714 full-text articles which have been published during the years 2000-2024 were included. The relevant literature was extracted from the Scopus database. In the bibliometric analysis, the highest number of publications related to weedy rice was recorded in 2021, with 100 publications. Key journals involved in publication in weedy rice with the highest number of publications include "Weed Science" (37 documents), "Weed Technology" (27 documents), and "Crop Protection" (19 documents). The most cited organization is the Department of Plant Sciences, North Dakota State University (364 citations) and the results indicate the contribution of U.S. universities for the weedy rice research. Country-wise analysis shows that the United States leads with 207 documents and 8276 citations, followed by China with 156 documents and 4178 citations. This analysis provides a global perspective on weedy rice research, highlighting key trends, influential works, and major contributors in the field. This comprehensive review provides valuable insights into the adaptive mechanisms of weedy rice and explains the importance of integrated approaches in addressing this pervasive agricultural issue.

Keywords: Weedy rice, de-domestication, hybridization, cultivated rice, systematic review, bibliometric analysis

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