



Acrocomia spp.: neglected crop, ballyhooed multipurpose palm or fit for the bioeconomy? A review

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Abstract

Acrocomia spp., a genus of wild-growing palms in the neotropics, is rapidly gaining interest as a promising multipurpose crop. Diverse products can be derived from various components of the palm, the oils being of highest interest. *Acrocomia* shows similar oil yield and fatty acid composition to the African oil palm (*Elaeis guineensis*). It is, however, able to cope with a wider range of environmental conditions, including temporary water scarcity and lower temperatures, thus potentially a more sustainable alternative to its tropical counterpart. *Acrocomia*'s research history is recent compared to other traditional crops and thus knowledge gaps, uncertainty, and challenges need to be addressed. This review attempts to assess the *acrocomia*'s preparedness for cultivation by highlighting the state-of-the-art in research and identifying research gaps. Based on a systematic literature search following a value web approach, it (a) provides a comprehensive overview of research topics, (b) shows the development of publication activities over time and the drivers of this development, and (c) compiles main findings to assess the *acrocomia*'s preparedness for commercial cultivation. Our results confirm its multipurpose characteristic as a potential feedstock for manifold sectors. Research has continued to increase over the last decade, especially on *A. aculeata* and is driven by the interest in bioenergy. Increasing knowledge on botany has contributed to understanding the genetic diversity and genus-specific biology. This has enabled applied research on seed germination and propagation toward domestication and initial plantation activities, mostly in Brazil. Main research gaps are associated with genotype–environment interaction, planting material, crop management, and sustainable cropping systems. Overall, we conclude that *acrocomia* is at an early phase of development as an alternative and multipurpose crop and its up-scaling requires the integration of sustainability strategies tailored to location-based social-ecological conditions.

Keywords *Acrocomia aculeata* · Agroforestry · Biodiversity · Bioeconomy · Bio-based value chain · Bio-based value web · Biorefinery · Macaúba · Macaw palm · Coyol · Mbokajá · Minor crop · Oil crop · Vegetable oil

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