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for managing natural resources and a better life for all”

Orphan crop genomic research trend through integrating text mining and bibliometric analysis

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Abstract

Orphan crops are crops with limited attention in global research community. But these crops have many desirable traits in nutrition security, climate change, local adaptation and others. Proper exploitation and use of these important traits are must to tackle current and future climate change and nutritional security issues. The use of genomic tool in the research and development allows to exploit the potential of these neglected crops more effectively and fast. Content and thematic analysis, bibliometric analysis and text mining application are crucial to summaries the status of orphan crops research using genomic tools in the last 23 years. Web of science, Scopus and NCBI data bases was used to retrieve papers using keywords genomic” AND “tool” AND “orphan” AND “crops” for this review. Selection of papers done based on PRISMA guideline and 56 papers selected for the final data extraction. Data analysis and visualisation was done using R software, VOS viewer and Power BI software. The result showed that amount of publication increasing starting from 2017 G.C. 39% of the publication are from India followed by USA and Switzerland. From the papers published, 25 papers are about legumes. Articles & reviews get about 28 and 20 publications respectively. About 41 % which is 23 papers are focused on function whereas 25 % are focused on structure. The result from word cloud showed that the words “crop” and “genome” was mentioned frequently in the reviews. In regard to genomic tool used markers like SNP, EST, SSR and CRISPRCas genome editing are mostly used. Transcriptomics, Genomics, Proteomics, GWAS and RNA seq are the major bioinformatics approach followed by the researchers. Even if the attention given for the orphan crop research showed some advancement recently, a lot of works are remaining in order to understand well and utilise efficiently.

Keywords: Crops, genomics, orphan