

1. Record Nr.	UNINA9910841855603321
Titolo	Roots, Tubers, and Bulb Crop Wastes: Management by Biorefinery Approaches // edited by Ramesh C Ray
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9982-66-9
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (376 pages)
Disciplina	628.74
Soggetti	Agricultural biotechnology Microbiology Biochemistry Agricultural Biotechnology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Chapter 1 Roots, tubers, and bulb crops wastes: residue utilization for industrial biotechnology -- Chapter 2 Biovalorization of potato peel waste: an overview -- Chapter 3 Potato peel enrichment in functional food and feed -- Chapter 4 Management of potato peel waste through biorefinery approaches -- Chapter 5 Bioprocessing cassava bagasse. part i. bioproducts and biochemicals -- Chapter 6 Bioprocessing of Cassava Bagasse: Part II.Potential for Renewable Biofuels -- Chapter 7 Bio-Valorization of Sweet Potato Bagasse into Food Additives, Feeds, and Fuels -- Chapter 8 Yams and Aroid Crop Waste: Bio Valorization into Bioproducts and Platform Chemicals -- Chapter 9 Valorization of Carrot and Turnip Processing Wastes and By-Products -- Chapter 10 Sugar Beet Waste as Substrate for Microbial Production of Food Ingredients -- Chapter 11 Valorization of Beetroot Waste for Extraction of Natural Dye for Textile and Food Applications -- Chapter 12 Valorization of Jerusalem Artichoke and its Crop Residues Using Green Technologies -- Chapter 13 Onion Solid Waste as A Potential Source of Functional Food Ingredients -- Chapter 14 Biovalorization of Garlic Waste to Produce High-Added Value Products -- Chapter 15 - Life cycle assessment of valorization of root and tuber crop wastes for bio-commodities and biofuels- Cassava as a case study -- Chapter 16 Prospective for Biorefineries Development from Roots, Tubers, and Bulb

Sommario/riassunto

This edited book brings forth comprehensive information on the bioprocessing and biovalorization of root (i.e., cassava, sweet potato, yams, and aroids), tuber (i.e., potato, carrot, turnip, artichoke and beet root), and bulb (i.e., onion and garlic) crop wastes into various products and platform chemicals in a biorefinery approach. The non-edible portion of roots, tubers, and bulb crops, after processing (waste), such as peels, skins, pulps, rejects, and unmarketable tubers, account for about 20–40% of the total weight of the fresh produce. Tropical tuber crops such as cassava, yams, aroids, and sweet potato generate bagasse, the byproduct of the starch processing industry, which contains about 30–50% starch and fibrous materials on a dry weight basis. Similarly, the husk is the leading waste from onion and garlic processing. The amount of waste and byproducts of potato industry is estimated to be around 12–20% of their total production. These wastes pose increasing disposal and potentially severe pollution problems and represent a loss of valuable biomass and nutrients. Roots, tubers, and bulb wastes usually have a composition of sugar, starch, proteins, phenolic phytochemicals, fibers, and minerals. Therefore, they should not be considered as “wastes” but raw materials for other industrial processes in the biorefinery approach. These wastes provide conditions amenable for the growth of microorganisms and opens up great opportunities for their reuse in fermentation processes to develop value-added bioproducts such as enzymes, single-cell proteins, bio-absorbents, phenolic bioactive compounds, aroma and flavor compounds, organic acids, and biofuels. This book fills the gap in literature about the processes and by-products. The book is composed of 16- chapters deep diving into valorization and bioprocessing of a range of tuber crop waste. The book explores these processes in 11 different crops and highlights the life cycle assessment as well as highlights the opportunities about commercialization of technologies used in bioprocessing and bio-valorization of root crop waste. The processes explained in the book are rooted in the principles of circular economy. This book is of interest to teachers, researchers, environmentalists, bio-based industrialist, and policymakers.
