Promoting zero-waste vegetable production practices in South African marginal areas

Nadia Araya, Johleen Malaka, Graig Sithole and Althea Grundling
ARC-Natural Resources and Engineering

In South Africa, only approximately 16% of 1,22 million km² of the total land surface area is considered arable, with potential for cultivation. Close to 48.5% of this area is considered marginal or of low agricultural potential, which makes cultivation extremely unreliable, with increased risks of crop failure (DALRRD, 2020). This is because, these areas are often faced with drastic climate change effects, rely on rainfed agriculture, have lack of modern technology and inputs, limited market access and land fragmentation. Marginal areas in South Africa, particularly in terms of crop production suitability, are primarily found in drier parts of the country. These areas include the Kalahari Desert and the Great Karoo region, which are primarily characterized by desert and arid climates. To improve crop production efficiencies in these regions, there is a need to maximize utilization of the scarce resources that are available. It is within this context that zero-waste crop production practices are being promoted at Groenvingers Vegetable Farm, located in Kanoneiland, Great Karoo region of the Northern Cape Province.

Zero-waste crop production practices being promoted at Groenvingers Vegetable Farm, located in Kanoneiland, Great Karoo region of the Northern Cape Province

Postharvest losses including leaves (top left) and unmarketable roots (top right) from a 1.0-ha beetroot field are collected and fed to pigs (bottom left), which in turn, produce swine waste that is used for generating manure to be applied back in the field as an organic fertilizer for soil structure and fertility improvements bottom right) at Groenvingers Vegetable Farm

Zero-waste crop production in marginal areas focuses on utilizing all resources, minimizing waste, and promoting sustainable practices. Zero-waste crop production for animal feed, with subsequent use of the animal waste for organic soil amendments, is being implemented by the Agricultural Research Council as part of a project funded by the Department of Agriculture, Land Reform and Rural Development. Postharvest losses (leaves and unmarketable roots) from a 1.0-ha beetroot field are collected and fed to pigs, which in turn, produce swine waste that is used for generating manure to be applied back in the field as an organic fertilizer for soil structure and fertility improvements. This, consequently, contributes to increased crop productivity and a more sustainable circular agriculture model.

Reference

DALRRD, 2020. Economic Review of the South African Agriculture. Department Of Agriculture, Land Reform and Rural Development. https://www.dalrrd.gov.za/ (Accessed on 15 November 2023).

Inquiries:
Dr Nadia Ibraimo Araya *IbraimoN@arc.agric.za*