Bulb and stem vegetables as well as carrots may be minimally processed to obtain ready-to-eat products, and these steps include selection, washing, cleaning, cutting, packaging and storage. Risk factors for the contamination of bulb and stem vegetables as well as carrots with Salmonella, Yersinia, Shigella and Norovirus were considered in the context of the whole food chain. Available estimates of their occurrence in these vegetables were evaluated together with mitigation options relating to prevention of contamination and the relevance of microbiological criteria. Emphasis is given to vegetable types associated with public health risks, i.e. carrots, onion and garlic. It was concluded that each farm environment represents a unique combination of risk factors that can influence the occurrence and persistence of pathogens in the primary production of these vegetables. Appropriate implementation of food safety management systems including Good Agricultural Practices (GAP), Good Hygiene Practices (GHP) and Good Manufacturing Practices (GMP) should be the primary objectives of producers of bulb and stem vegetables as well as carrots. Considering the limited evidence for both the occurrence and public health risks from contamination of Salmonella, Shigella, Yersinia and Norovirus in the primary production and minimal processing of bulb and stem vegetables and carrots, no conclusions can be made on the impact of the establishment of microbiological Hygiene Criteria, Process Hygiene Criteria or Food Safety Criteria on public health. There is a lack of data on the occurrence and levels of Escherichia coli in bulb and stem vegetables as well as carrots. Thus, the effectiveness of E. coli criteria to verify compliance to GAP, GHP, GMP and food safety management systems (including HACCP) in the production and minimal processing of bulb and stem vegetables as well as carrots cannot be assessed.