

Potassium fertilisation in the perspective of human health

► usual amounts of potassium in fruits and vegetables. “The risk of potassium overload from plant-based diets appears overstated, mostly opinion-based, and not supported by the evidence”, according to researchers in a recently published [article](#) in *Current Opinion in Nephrology and Hypertension*. Other US-based researchers point to the weak associations between dietary potassium intake and [serum](#) potassium levels (see [article](#) in *Kidney360* and [article](#) in the *Journal of Renal Nutrition*). They speculate whether new [potassium binding agents](#) that fix potassium in the [gastrointestinal tract](#) might allow patients at risk for too high serum potassium levels to enhance their consumption of potassium-containing fruits and vegetables without developing hyperkalemia. “This benefit would in essence provide high-risk patients the health benefits afforded by diets rich in fruits and vegetables”, they say with reference to the overall health-promoting effects of such diets. A just published [review](#) in the *American Journal of Kidney Diseases* concludes that the risk of hyperkalemia “may not have been as significant as previously thought”. Dutch nephrologists even go one step further. “Emerging data indicate that dietary potassium may be beneficial for patients with CKD”, they say in a just published comprehensive [review](#) in the *Clinical Kidney Journal*. The nephrologists reviewed the relation between dietary potassium and the kidney in general, and chronic kidney disease (CKD) in particular.

Leaching out potassium

In Japan, most of the chronic kidney disease patients are really restricted in potassium intake. Most of the vegetables and fruit for the special meal for these patients are boiled in water or rinsed in water to leach out potassium. So, the low-potassium production technique is important, especially for fruits and vegetables that can't be boiled before use, says research horticulturist [Satoru Tsukagoshi](#) from the Chiba University. Thus, Japanese researchers interested in low-potassium fruits and vegetables go their own way. New reports are still published, albeit less frequently than a few years ago. Interest in low-potassium fruits and vegetables has also been aroused outside Japan. South Korean researchers, for example, have developed a vertical farming cultivation method to produce low-potassium kale with increased glucosinolate content (see [article](#) in *Food Chemistry*). Research groups in China, Italy, Mexico and Taiwan have also published studies into the

production of low-potassium vegetables and an Ecuadorian student defended in 2020 his [MSc thesis](#) about low-potassium lettuce.

Little commercialised yet

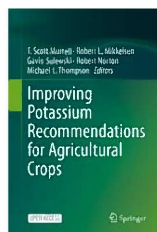
At the moment there are few or no low-potassium fruits or vegetables on the market. Hydroponic crop production specialist [Toshiki Asao](#) from the Shimane University has developed a production method for netted melon with low potassium content, but the production is not commercialised yet. However, SANWA Company is producing low potassium content melon at Shimane Prefecture and started selling, says Asao.

Low-potassium lettuce has been produced in a plant factory with artificial lighting, says Satoru Tsukagoshi. He says not to be sure whether it is used by chronic kidney disease patients or not. Tsukagoshi and his colleagues have established a low-potassium cherry-type tomato production method and they are studying how to manage the fertiliser supply automatically by solar radiation and temperature in the greenhouse. Low-potassium tomato fruit has been produced commercially by a company, but this company quitted the production because of the large amount of fruit drop caused by potassium deficiency. Tsukagoshi thinks this was due to an inappropriate management.

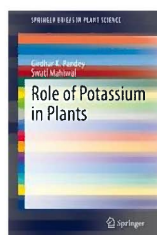
Table. Crops tested at a low level of potassium fertilisation

Fruits				
Melon	article	article		
Tomato	article	article		
Strawberry	article			
Potted highbush blueberry	article			
Vegetables				
Kale	article			
Lettuce	article	article	article	article
	article	article	article	article
	article	MSc thesis	MSc thesis	
Komatsuna	article			
Spinach	article	article	article	
Swiss chard	article			
Microgreens	article			
Onion	article			

Two new books on potassium



Improving Potassium Recommendations for Agricultural Crops compiles potassium knowledge shared at various meetings. This book is edited by authors related to the new African Plant Nutrition Institute. This book advocates for a paradigm shift in potassium recommendation, according to Paul Fixen, the retired senior vice-president of the former International Plant Nutrition Institute, the predecessor of the African Plant Nutrition Institute. The open access book is published by Springer. [ISBN: 9783030591960](#) [eISBN:978303059197-7](#)



Role of Potassium in Plants is written by two researchers from the Department of Plant Molecular Biology, University of Delhi, India. The authors describe potassium uptake and transport processes, potassium channels and transporters and potassium homeostasis. They discuss the role of potassium in abiotic and biotic stress tolerance and its possible signaling role as a second messenger. This book is published by Springer as part of the SpringerBriefs in Plant Science book series. [ISBN: 9783030459529](#) [eISBN: 9783030459536](#)