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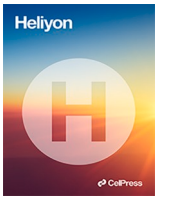

Corrigendum

Corrigendum to "microgreens on the rise: Expanding our horizons from farm to fork"

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In the original published version of this article, the citations in Tables 1–4 were not in numerical format and incorrectly referenced. The authors provided updated versions for Tables 1–4 and the manuscript file, and the correction was reviewed and confirmed by the handling editor.

The correct version of Tables 1–4 can be found below.

Table 1
Evolution of microgreen definitions across several decades.

Year	Common name	Scientific name	Definition	References
2004	Beet or Chard	*Beta vulgaris* L.	Microgreens have been defined as salad crop shoots harvested for consumption within 10–20 days of seedling emergence. Generally, microgreens have two fully developed cotyledon leaves, with the first pair of true leaves emerged or partially expanded, and during harvest they are cut above the soil line, whereas sprouts are mainly soaked in the water and younger, with the cotyledon not opened or just opened.	[21]
2005	Radish Kale Amaranth	*Raphanus sativus* *Brassica napus* var. *Pabularia* *Amaranthus tricolor*	Salad crop shoots for harvest and consumption within 10–20 days of seedling emergence ("microgreens")	[22]
2010	Table beet	*Beta vulgaris* L.	Microgreens have been defined as salad crop shoots harvested for consumption within 10–20 days of seedling emergence, and they are developmentally classified between "sprouts" and "baby salads."	[23]
2011	Table beet	*Beta vulgaris* L.	Microgreens are defined as salad crop shoots harvested for consumption within 10–20 days of seedling emergence	[24]
2012	Florida Broadleaf	*(Brassica juncea* L.	Microgreens are a type of specialty leafy green harvested shortly after the first true leaves have emerged. They are harvested just above the roots and consumed fresh as salad greens.	[25]
2013	Broccoli	*Brassica Oleracea* var. *italica*	Harvested at the first true leaf stage and sold with the stem, cotyledons (seed leaves), and first true leaves attached, they are among a variety of novel salad greens available	[19]

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Table 1 (*continued*)

Year	Common name	Scientific name	Definition	References
			on the market that are typically distinguished categorically by their size and age. Sprouts, microgreens, and baby greens are simply those greens harvested and consumed in an immature state. Based on size or age of salad crop categories, sprouts are the youngest and smallest, microgreens are slightly larger and older (usually 2 in. tall), and baby greens are the oldest and largest (usually 3–4 in. tall).	
	Broccoli	*Brassica oleracea* var. *italica*	Microgreens are specialty leafy crops harvested just above the roots after the first true leaves have emerged and are consumed fresh.	[26]
	Mint	*Perilla frutescens*	Microgreens are seedlings of vegetable and herbs that are grown to fully opened cotyledons or first true leaf stage	[27]
	Borage	*Borago officinalis* L.	Microgreens are a type of specialty leafy greens harvested shortly after the first true leaves have emerged. They are cut just above the roots and consumed fresh as salad greens	[28]
	Red cabbage Purple kohlrabi Purple mustards Mizuna	*Brassica oleracea* var. *capitata* *B. oleracea* var. *gongylodes* *Brassica juncea* *B. juncea* var. *japonica*	Microgreens are young edible greens produced from vegetables, herbs, or other plants, ranging in size from 5 to 10 cm long including stem and cotyledons (seed-leaves).	[29]
2014	Broccoli	*Brassica oleracea* var. *italica*	Microgreens are young and tender cotyledon greens harvested within 7–14 days of vegetable seedling emergence	[30]
	Radish	*Raphanus sativus*	Microgreens are a new class of specialty vegetables that are often harvested at the cotyledonary leaf stage without roots and seed coats. They are tender cotyledonary-leaf plants having vivid colors, intense flavors and tender textures.	[31]
2015	Mustard Red pak choi Tatsoi	*Brassica juncea* L. *'Red Lion* *Brassica rapa* var. *chinensis* *'Rubi* *F1'* *Brassica rapa* var. *rosularis*	Microgreens are seedlings of vegetables and herbs that are grown to the fully opened cotyledon or first true leaf stages.	[32]
	Daikon radish	*Raphanus sativus* L.*var. longipinnatus*	They are young seedlings of vegetables, herbs, or other plants, with cotyledons fully developed and the first pair of true leaves emerged or partially expanded.	[33]
2016	Red cabbage	*Brassica oleracea* var. *capitata f. rubra*	Microgreens are tender immature plants produced from the seeds of vegetables (such as red cabbage) and herbs having two fully developed cotyledon leaves with or without the emergence of a rudimentary pair of first true leaves.	[34]
	Rapini	*Brassica rapa* L.	Microgreens, an emerging category of edible greens, are tender seedlings produced from the seeds of different species of vegetables, aromatic herbs and herbaceous plants, including wild edible species. Microgreens are generally harvested 7–21 days after germination, when cotyledonary leaves are fully developed, with or without the emergence of a small pair of true leaves.	[11]
	Arugula Watercress Mustard Dijon Cauliflower	*Eruca sativa Mill.* *Nasturtium officinale* L. *Brassica juncea (L.) Czern.* *Brassica oleracea* L. *var. botrytis*	They are young seedlings of vegetables herbs, harvested when cotyledons are fully developed and the first pair of true leaves are emerging or partially expanded.	[35]
	Purple kohlrabi Mizuna Mustard	*(Brassica oleracea* L. *var. gongylodes L.)* *Brassica rapa* L. *var. japonica* *Brassica juncea (L.) Czern. 'Garnet Giant*	Microgreens and baby greens are a relatively new specialty crop appearing in many upscale markets and restaurants. Collectively, these crops consist of vegetables and herbs consumed at a young growth stage. The main difference between the two is that microgreens are harvested at the base of the hypocotyl when the first set of true leaves start to emerge, while baby greens are harvested after the first set of true leaves has developed, generally >21 d after germination	[36]
2017	Rye	*Secale cereale*	A microgreen has a single central stem, which has been cut just above the soil during harvesting …. The seedlings are well suited for local growers because microgreens are harvested just 7–14 days after germination when the cotyledons (seed leaves) have fully developed and before the true leaves have expanded	[37]
	Garden pea Carrot Amaranth	*Pisum sativum* *Daucus carota* *Amarantuhus tricolor*	vegetables, grains and herbs grown to the phenological phase of cotyledons, or to the development of the first pair of true leaves	[38]
	Mustard Beet Parsley	*Brassica juncea* L., *'Red Lion'* *Beta vulgaris* L., *'Bulls Blood'* *Petroselinum crispum Mill., 'Plain Leaved or French'*	Microgreens are harvested at the first true leaf stage of growth and belong to the group of "functional foods," and have higher levels of bioactive compounds	[39]
	Kale	*Brassica oleracea* L.	Kale was grown to five defined developmental stages, fully expanded cotyledon (microgreen 1 or MG1), seedlings with two true leaves (microgreen 2 or MG2), seedlings with four true leaves (baby green 1 or BL1), seedlings with six true leaves (baby green 2or BL2), and mature plants with more than eight true leaves (adult).	[40]
2018	Alfalfa Swiss chard	*Medicago sativa* L. *Beta vulgaris* subsp. *vulgaris*	Microgreens are harvested just above the roots when the cotyledons are fully formed or the first true leaves have emerged. They can be grown in soil or soil substitutes or hydroponically and require high-light conditions for efficient growth. Microgreens are	[41]

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Table 1 (*continued*)

Year	Common name	Scientific name	Definition	References
			halfway in size between sprouts and their older counterparts, such as baby spinach, but deliver the most in terms of flavor and nutritional values compared to the other two types of crops.	
	Molfetta Trocadero Mugnuli	*Cichorium intybus* L. *Lactuca sativa* L. *Brassica oleracea* L.	They are young and tender vegetables, obtained from the seeds of numerous species (vegetables, herbaceous plants, aromatic herbs and wild edible plants), harvested a few days or weeks after germination, when the cotyledons are fully developed and the first true leaves may be emerging	[42]
2019	Coriander Jute Swiss chard	*Coriandrum sativum* *Corchorus olitorius* *Beta vulgaris*	Microgreens constitute a novel specialty crop, defined as immature greens harvested 51 without roots from the tender seedlings of vegetables, herbs, grains and wild crop relatives	[43]
2020	Amaranth Kale Kohlrabi	*Amaranthus cruentus* L. *Brassica oleracea* var. *sabellica* *Brassica oleracea* Gongylodes Group	Microgreens are newly sprouted, immature plants without roots that are harvested after the development of the cotyledon leaves, or seed leaves, usually between 10 and 14 days from seeding	[44]
2021	Fenugreek Green pea	*Trigonella foenum-graecum L.* *Pisum sativum* L.	Microgreens are tender immature greens produced from the seeds of vegetables, herbs, or grains, inclusive of the wild relatives	[45]
2022	Chinese basil	*Perilla frutescens* var. *crispa*	Microgreens are young vegetable seedlings harvested generally after the complete development of the cotyledons and/or the formation of the first leaves; they are considered innovative and emerging foods.	[46]
	Lutfibey Bilensoy Dadas Arda Sazak Amazon Arifiye	*Onobrychis sativa* *Medicago sativa* *Trifolium pratense* *Cicer arietinum* *Lens culinaris* *Vigna unguiculata* *Zea mays*	Microgreens with a stem and cotyledon leaves are harvested before the true leaves emerge, when they are 5–10 cm in height depending on the plant	[47]

Table 2
Plant families explored for microgreens production.

Family	Species	References
Amaranthaceae	*Amaranthus caudatus* (Foxtail amaranth)	[52]
	Amaranthus cruentus (Red amaranth)	[53]; [52]
	Amaranthus hypochondriacus (Prince's feather)	[52]
	Maranthus tricolor (Edible amaranth)	[54]
	Atriplex hortensis (Red orach)	[31]
	Chenopodium album (Pigweed)	[55]
	Chenopodium quinoa (Duinoa)	[52]
Apiaceae	*Anethum graveolens* (Dill)	[55]
	Coriandrum sativum (Coriander)	[43]
Araliaceae	*Panax ginseng* (Korean ginseng)	[56]; [57]
Asteraceae	*Artemisia dracunculus* (Tarragon	[58]
	Cichorium intybus (Chicory)	[42]
	Taraxacum officinale (Common dandelion)	[59]
Basellaceae	*Basella alba* (Malabar spinach)	[13]
Boraginaceae	*Borago officinalis* (Borage)	[60]
	Phacelia tanacetifolia (Phacelia)	[61]
Brassicaceae	*Brassica oleracea* var. *italica* (Broccoli)	[4]
	Brassica oleracea var. *acephala* (Kale)	[62]
	Sinapis arvensis (Field mustard)	[59]
	Wasabi japonica (Wasabi)	[14]
Chenopodiaceae	*Beta vulgaris* (Swiss chard)	[43]
Convolvulaceae	*Ipomoea aquatica* (Water spinach)	[13]; [42]
	Ipomea reptans L. (Morning glory)	[45]
	Raphanus sativus L. *var. longipinnatus* (Purple radish)	[45]
Cucurbitaceae	*Cucumis sativus* (Cucumber)	[13]
	Cucurbita moschata (Pumpkin)	[13]
	Lagenaria siceraria (Bottle gourd)	[13]
Fabaceae	*Glycine* max (Soybean)	[63]
	Medicago intertexta (Hedgehog medick)	[64]
	Medicago polymorpha (Bur clover)	[64]
	Melilotus indicus (Annual yellow sweet clover)	[64]
	Vigna radiata (Mungbean)	[63]; [65]; [45]; [66]; [67]
	Cicer arietinum (Chickpea)	[66]
	Trigonella foenum-graecum L. (Fenugreek)	[45]

(*continued on next page*)

Table 2 (*continued*)

Family	Species	References
	Pisum sativum L. (Green pea)	[45]
	Lens culinaris Medicus (Lentil)	[45]
	Mucuna pruriens (Kalonch)	[10]
	Caeselpenia mimosoides (Mimosa thorn)	[50]
Lamiaceae	*Ocimum basilicum* (Sweet basil)	[68]
	Ocimum xafricanum (Lemon basil)	[55]
	Ocimum sanctum (Sacred basil)	[55]
	Salvia hispanica (Chia)	[61]
Linaceae	*Linum flavum* (Golden flax)	[61]
Malvaceae	*Corchorus olitorius* (Jute mallow)	[13]
	Hibiscus subdariffa (Red roselle)	[5]
Onagraceae	*Oenothera biennis* (Evening primrose)	[61]
Pedaliaceae	*Sesamum indicum* L. (Black sesame)	[45]
Plantaginaceae	*Plantago coronopus* (Buck's-horn plantain)	[69]
Polygonaceae	*Rumex acetosa* (sorrel)	[69]
	Fagopyrum esculentum Moench (Buckwheat)	[45]
Portulacaceae	*Portulaca oleracea* (Purslane)	[69]
Rosaceae	*Sanguisorba minor* (Salad burnet)	[59]

Table 3
Nutritional profile of the microgreens grown in vermicompost media, a study by National Institute of Agricultural Extension Management, Hyderabad, India [138].

Category	Type	Mustard	Pink Radish	Broccoli	Fenugreek	Cauliflower
Macronutrients (mg/100g)	**Protein**	2.52	2.31	3.90	3.11	3.99
	Total Fat	0.42	0.29	0.78	0.65	0.70
	Dietary Fiber	1.052	0.61	0.87	1.32	1.24
	Carbohydrate	1.05	1.50	3.48	4.35	3.55
	Energy (Kcal)	20.10	19.03	38.18	38.18	38.81
Micronutrients (mg/100g)	**ß- Carotene** (µg/100g)	5421	5293	4892	7538	3670
	Vit. B2	0.72	0.14	0.14	0.85	0.21
	Vit. B3	1.84	1.38	0.87	1.89	0.65
	Vit. B5	1.83	0.86	0.93	1.81	1.26
	Vit. B6	0.51	0.46	0.62	0.91	0.74
	Vit. C	76.47	38.84	48.26	104	93.46
Minerals (mg/100g)	**P**	1085.8	1069.5	997.91	1023.2	973.01
	Zn	7.05	9.34	7.31	7.84	1.97
	Fe	12.35	10.13	9.48	8.17	11.84
	Mn	4.25	5.87	6.34	8.12	3.23
	Cu	1.50	1.25	1.17	0.71	1.27
	Mg	703.56	723.74	705.2	645.2	785.4
	K	5646.28	7456.21	6913.12	2398.47	7905.81
	Na	687.98	693.47	789.53	532.78	456.87

Table 4
Advantages and applications of some of the most popular microgreen vegetables/crops.

S. No	Crop name	Scientific name	Nutritional value and uses	References
1	Amaranth	*Amaranthus vridis*	Have vibrant colors and used for garnishing, Rich in Calcium, Iron and β-Carotene	[139]
2	Beetroot	*Beta vulgaris*	High antioxidant properties and rich in vitamin C	[139]
3	Broccoli	*Brassica oleracea*	Rich in minerals, vitamins and regulates immune system	[139]
4	Fenugreek	*Trigonella foenum-graecum*	Rich in protein, vitamins and minerals	[139]
6	Chickpea	*Cicer arietinum*	Nutrient and phytochemicals rich, Antioxidant activity	[66]
7	Tamarind	*Tamarindus indica*	Rich source of storage proteins and protease inibitors	[49]
8	Mimosa thorn	*Caesalpinia mimosoides*	Rich source of storage proteins and protease inibitors, antimicrobial activity	[50]
9	Castor bean	*Ricina communis*	Rich source of storage proteins and protease inibitors	[140]
10	Mungbean	*Vigna radiata*	Nutrient and phytochemicals rich, Antioxidant activity	[65]; [66]; [67]

CRediT authorship contribution statement

Jafar K. Lone: Writing – review & editing. **Renu Pandey:** Writing – review & editing. **Gayacharan:** Writing – review & editing.

Declaration of competing interest

All the authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.