



CULINARY
HERBS & SPICES
of the
WORLD

BEN-ERIK VAN WYK



CULINARY
HERBS & SPICES
of the
WORLD

BEN-ERIK VAN WYK

For centuries herbs and spices have been an integral part of many of the world's great cuisines. But spices have a history of doing much more than adding life to bland foods. They have been the inspiration for, among other things, trade, exploration, and poetry. Priests employed them in worship, incantations, and rituals, and shamans used them as charms to ward off evil spirits. Nations fought over access to and monopoly of certain spices, like cinnamon and nutmeg, when they were rare commodities. Not only were many men's fortunes made in the pursuit of spices, spices at many periods throughout history literally served as currency.

In *Culinary Herbs and Spices of the World*, Ben-Erik van Wyk offers the first fully illustrated, scientific guide to nearly all commercial herbs and spices in existence. Van Wyk covers more than 150 species—from black pepper and blackcurrant to white mustard and white ginger—detailing the propagation, cultivation, and culinary uses of each. Introductory chapters capture the essence of culinary

traditions, traditional herb and spice mixtures, preservation, presentation, and the chemistry of flavors, and individual entries include the chemical compounds and structures responsible for each spice or herb's characteristic flavor. Many of the herbs and spices van Wyk covers are familiar fixtures in our own spice racks, but a few—especially those from Africa and China—will be introduced for the first time to American audiences. Van Wyk also offers a global view of the most famous use or signature dish for each herb or spice, satisfying the gourmand's curiosity for more information about new dishes from little-known culinary traditions.

People all over the world are becoming more sophisticated and demanding about what they eat and how it is prepared. *Culinary Herbs and Spices of the World* will appeal to those inquisitive foodies in addition to gardeners, botanists, and academics.

Ben-Erik van Wyk is professor of botany at the University of Johannesburg and the author of several best-selling books on plants and plant use.

6¹/₂ x 9¹/₂ · 320 pages

600 color plates

Cloth: \$45.00

ISBN-13: 978-0-226-09166-2

E-book ISBN-13:
978-0-226-09183-9

Publication date: October 2013

Copublished with the Royal Botanic
Gardens, Kew, and
Briza Publications

For a review copy or other publicity
inquiries, please contact:

Micah Fehrenbacher
Promotions Manager
The University of Chicago Press
1427 East 60th Street
Chicago, IL 60637

Phone: 773-702-7717

Fax: 773-702-9756

E-mail: micahf@uchicago.edu

To place orders in North and South
America, please contact your local
University of Chicago Press
sales representative or contact
The University of Chicago Press by
phone at 1-800-621-2736 or
by fax at 1-800-621-8476.
Other rights are restricted.

Contents

Preface	6
Introduction and history	7
Regions of origin (culinary traditions)	8-11
Cultivation, harvesting and processing	12-13
Salad herbs (listed by common name)	14-15
Culinary herbs and herb mixtures (listed by common name)	16-17
Spices and spice mixtures (listed by common name)	18-19
Other sources of flavour and colour	22-23
Sauces, dips, pastes and preservatives	
Extracts and essences	
Vinegars, dressings, wine and beverages	
Food colourings (natural dyes) and garnishes	
The chemistry of flavours and fragrances	24-27
The herbs and spices (in alphabetical order by plant name)	28-267
Quick guide to culinary herbs and spices	268-289
Further reading	290
Acknowledgements and photo credits	294
Index	295-304

Selection of species for *Culinary Herbs and Spices*

120 spreads covering more than 150 species

1. *Aframomum corrorima* (korarima, Ethiopian cardamom)
2. *Aframomum melegueta* (melegueta pepper)
Xylopiya aethiopica (Guinea pepper)
3. *Agathosma betulina* (buchu)
4. *Allium fistulosum* (Welsh onion, Japanese bunching onion)
Allium ameloprasum (leek)
Allium cepa (onion, bulb onion, shallot)
5. *Allium sativum* (garlic)
Allium ursinum (bear's garlic, wood garlic, ramsons)
6. *Allium schoenoprasum* (chives)
7. *Allium tuberosum* (garlic chives, Chinese chives)
8. *Aloysia triphylla* (lemon verbena)
9. *Alpinia galanga* (greater galangal, galangal)
Alpinia officinarum (lesser galangal, *gao-liang-jiang*)
Kaempferia galanga (kencur, *san-nai*)
10. *Anethum graveolens* (dill)
11. *Angelica archangelica* (angelica)
Angelica sinensis (Chinese angelica; *dang-gui*)
12. *Anthriscus cerefolium* (chervil)
13. *Apium graveolens* (celery)
14. *Armoracia rusticana* (horseradish)
15. *Artemisia dracunculus* (tarragon)
Artemisia abrotanum (southernwood)
Artemisia absinthium (wormwood, absinth)
Artemisia vulgaris (mugwort)
16. *Bixa orellana* (annato)
17. *Boesenbergia rotunda* (Chinese keys, *suo shi*)
18. *Borago officinalis* (borage)
19. *Brassica nigra* (black mustard)
Brassica juncea (brown mustard, Indian or Dijon mustard)
20. *Calendula officinalis* (marigold)
21. *Camellia sinensis* (tea)
Chamaemelum nobile (chamomile, Roman chamomile)
Matricaria recutita (German chamomile)
22. *Capparis spinosa* (capers)
Canarium pimela (black Chinese canarium, *wu ian*)
23. *Capsicum frutescens* (chilli pepper, cayenne pepper)
Capsicum annum (paprika pepper, sweet pepper)
24. *Carthamus tinctorius* (safflower)
25. *Carum carvi* (caraway)
26. *Chrysanthemum xmorifolium* (chrysanthemum, *ju hua*)
Chrysanthemum vulgare (tansy)
Chrysanthemum balsamita (alecost)
27. *Cinnamomum aromaticum* (cassia, Chinese cinnamon)
28. *Cinnamomum verum* (cinnamon, Ceylon cinnamon)
29. *Citrus aurantiifolia* (West Indian lime, lime leaf)
30. *Citrus hystrix* (makrut lime, *papeda*)
31. *Citrus limon* (lemon)
32. *Citrus reticulata* (mandarin peel, tangerine, *nartjie*)
Citrus aurantium (bitter orange)
Citrus sinensis (orange, sweet orange)
33. *Cocos nucifera* (coconut)
34. *Coffea arabica* (coffee)
35. *Coriandrum sativum* (coriander, cilantro)
36. *Corylus avellana* (hazelnut)
37. *Crambe maritima* (seakale)
38. *Crocus sativus* (saffron)
39. *Cuminum cyminum* (cumin)
Bunium persicum (black cumin)
40. *Curcuma longa* (turmeric, curcuma)
Curcuma amada (mango ginger)
Curcuma zedoaria (=C. *zerumbet*) (zedoary)
41. *Cymbopogon citratus* (lemongrass)
42. *Elettaria cardamomum* (cardamom)
43. *Eryngium foetidum* (eryngo)
44. *Eruca sativa* (rocket)
Diplotaxis tenuifolia (wild rocket)
45. *Ferula assafoetida* (asafoetida)
46. *Foeniculum vulgare* (fennel)
47. *Glycine max* (soybean, soy; *shoyo*, *miso*, *tofu*)
48. *Glycyrrhiza glabra* (liquorice, licorice)
49. *Hibiscus sabdariffa* (hibiscus, roselle, Jamaica sorrel)
50. *Humulus lupulus* (hop, hops)
51. *Hyssopus officinalis* (hyssop)
52. *Illicium verum* (star anise)
53. *Juglans regia* (walnut, common walnut)
Aleurites moluccana (candlenut)
54. *Juniperus communis* (juniper berries)
55. *Lactuca sativa* (lettuce)
Montia perfoliata (miner's lettuce, spring beauty)
Atriplex hortensis (orache)
Valerianella locusta (corn salad, lamb's lettuce)
Centranthus ruber (red valerian)
56. *Laurus nobilis* (bay leaf, true laurel)
Syzygium polyanthum (salam leaf, *duan salam*)
Sassafras albidum (sassafras)
57. *Lavandula officinalis* (lavender)
58. *Lepidium sativum* (garden cress, cress)
Barbarea vulgaris (winter cress, yellow rocket)
Barbarea verna (land cress, American winter cress)
Cochlearia officinalis (scurvy grass)
59. *Levisticum officinale* (lovage)
60. *Lippia adoensis* (koseret)
61. *Mangifera indica* (mango, *aamchur*, *aamchoor*)
Prunus avium (sweet cherry; *mahlab*, *mahaleb*, *malepi*)
Prunus mahaleb (*mahlab*)
Lycopersicon esculentum (tomato)
Garcinia atroviridis (*Asam gelugor*)
62. *Melissa officinalis* (lemon balm, balm, common balm)
Monarda didyma (bergamot, bee balm)
63. *Mentha x piperita* (peppermint)
Mentha x piperita 'Citrata' (eau de cologne mint)
Mentha arvensis (Japanese mint)
64. *Mentha pulegium* (pennyroyal)
Mentha requienii (Corsican mint)
65. *Mentha spicata* (mint, spearmint)
Mentha x rotundifolia (apple mint)
Mentha aquatica (water mint)
Mentha suaveolens 'Variegata' (pineapple mint)
Mentha longifolia (horse mint)

Selection of species for *Culinary Herbs and Spices*

120 spreads covering more than 150 species

66. *Murraya koenigii* (curry leaf)
67. *Myristica fragrans* (nutmeg and mace)
68. *Myrrhis odorata* (sweet cicely)
69. *Myrtus communis* (myrtle)
70. *Nelumbo nucifera* (lotus)
71. *Nigella sativa* (black cumin, black seed, *kalonji*)
72. *Ocimum basilicum* (basil)
 - Ocimum americanum* (= *O. canum*) (hoary basil)
 - Ocimum tenuifolium* (= *O. sanctum*) (holy basil, *tulsi*)
73. *Origanum majorana* (marjoram)
 - Origanum onites* (pot marjoram)
74. *Origanum vulgare* (origanum)
75. *Pandanus amaryllifolius* (pandan, fragrant pandan)
76. *Papaver somniferum* (poppy seeds)
77. *Perilla frutescens* (Japanese perilla, common perilla)
78. *Persicaria odorata* (laksa, Vietnamese mint)
 - Gnetum gnemon* (melinjo)
79. *Petroselinum crispum* (parsley)
80. *Pimenta dioica* (allspice)
 - Pimenta racemosa* (bay rum)
81. *Pimpinella anisum* (anise)
82. *Pinus pinea* (pine nut)
 - Pinus cembra* (Siberian pine)
 - Pinus edulis* (piñon)
83. *Piper nigrum* (black pepper, pepper)
 - Piper longum* (long pepper)
84. *Pistacia lentiscus* (mastic, *masticha*, *mistki*)
 - Pistacia vera* (pistachio)
85. *Plectranthus amboinicus* (Indian borage)
86. *Portulaca oleracea* (var. *sativa*) (purslane)
87. *Prunus dulcis* (= *P. amygdalis*) (almond)
88. *Punica granatum* (pomegranate, *anardana*)
89. *Raphanus sativus* (radish)
90. *Rhamnus prinoides* (geisho)
91. *Rheum rhabarbarum* (rubarb)
92. *Rhus coriaria* (sumach)
93. *Ribes nigrum* (blackcurrent)
 - Ribes* species
94. *Rorippa nasturtium-aquaticum* (watercress)
95. *Rosa rugosa* (Japanese rose)
 - Rosa ×damascena*; Rosaceae; damask rose, Persian rose
 - Rosa ×centifolia* (rose water)
96. *Rosmarinus officinalis* (rosemary)
97. *Rumex acetosa* (sorrel, common sorrel, garden sorrel)
 - Rumex sanguineus* var. *sanguineus* (red-veined dock)
 - Rumex scutatus* (French sorrel, buckles-leaved sorrel)
98. *Ruta graveolens* (rue, herb of grace)
99. *Salvia officinalis* (sage)
 - Salvia elegans* (= *S. rutilans*) (pineapple sage)
 - Salvia sclarea* (clary sage)
100. *Sambucus nigra* (elder, black elder)
101. *Sanguisorba minor* (salad burnet, garden burnet)
102. *Satureja hortensis* (savory, summer savoury)
 - Satureja montana* (winter savoury)
103. *Schinus molle* (pink pepper)
104. *Sesamum indicum* (sesame)
105. *Sinapis alba* (white mustard)
106. *Smyrniolum olusatrum* (alexanders, black lovage)
 - Sium sisarum* (skirret)
107. *Spilanthes acmella* (spilanthes, pará cress)
108. *Stevia rebaudiana* (stevia, sugar-leaf)
109. *Syzygium aromaticum* (clove)
110. *Tamarindus indica* (tamarind)
 - Ceratonia siliqua* (carob)
111. *Taraxacum officinale* (dandelion)
112. *Theobroma cacao* (cacao)
113. *Thymus vulgaris* (thyme)
 - Thymus ×citriodora*
 - Thymus serpyllum* (wild thyme)
114. *Trachyspermum ammi* (ajowan, ajwain, carom, omam)
115. *Trigonella foenum-graecum* (fenugreek)
116. *Tropaeolum majus* (nasturtium)
117. *Vanilla planifolia* (vanilla)
 - Mondia whitei* (white ginger)
118. *Wasabia japonica* (wasabi, Japanese horseradish)
119. *Zanthoxylum piperitum* (Chinese or Szechuan pepper)
120. *Zingiber officinale* (ginger)
 - Etlingera elatior* (torch ginger)



Salvia officinalis



Borago officinalis



Rosmarinus officinalis

Aframomum corrorima

korarima • Ethiopian cardamom

Aframomum corrorima (A. Br.) Jansen (Zingiberaceae); *korarima* (Amharic); *korarima, cardamome d'Ethiopie, poivre d'Ethiopie* (French)

DESCRIPTION Ethiopian cardamom or korarima is the ripe or near-ripe seeds of the korarima plant, usually sold enclosed in the dried fruit. These are shiny brown and 3 to 5 mm in diameter. They have a distinctive sweet smell (when crushed) and a delicious mild spicy taste very similar to cardamom.

THE PLANT A slender, leafy perennial of up to 2 m tall, with thin fleshy stems and broad, oblong leaves on a pseudo-stem arising from a creeping rhizome¹⁻³. Attractive pink flowers are borne near the ground and are followed by bright red, fleshy fruits containing numerous seeds.

ORIGIN The use of korarima is well known only from Ethiopia and Eritrea, where it is a very important spice and an essential component of the traditional cuisine⁴. The plant is thought to be endemic to Ethiopia (and perhaps Sudan) but it may also present in northern Kenya, western Uganda and Tanzania¹⁻³. The spice is exported to a limited extent, especially to Sudan, Egypt, Iran and India.

CULTIVATION Plantations of korarima are confined to Ethiopia (especially rain forests in the highlands of the southwest) and Eritrea. The spice is also wild-harvested to some extent. Plants can be grown from seeds but a much quicker option is to divide the rhizomes⁴. High humidity, mild temperatures and some shading

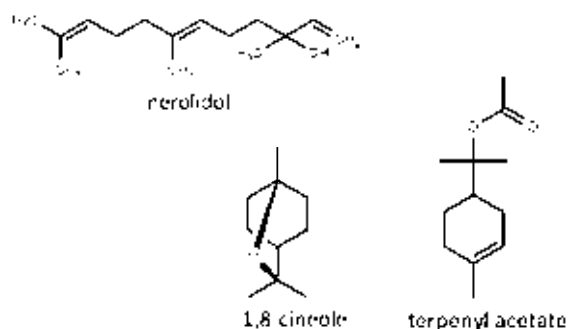
are required⁴. Flowering and fruiting occur almost throughout the year.

HARVESTING The fruits turn bright red when they are ripe and ready for harvesting and drying.

CULINARY USES Korarima is an important ingredient of *berbere*, *awaze*, *mitmita* and other Ethiopian spice mixtures^{4,5}. It is traditionally used to flavour coffee^{4,5}. Korarima can be used in the same way as cardamom (or in combination with cardamom to increase the complexity of the flavour).

FLAVOUR COMPOUNDS The essential oil contains terpinyl acetate, 1,8-cineole and nerolidol as the main chemical compounds but several others are also present, including sabinene, neryl acetate, geraniol, β -pinene, α -terpineol and terpen-4-ol⁶⁻⁸.

NOTES The seeds are used in Ethiopian traditional medicine as tonics and carminatives^{4,5}.



1. Lock, J.M. 1976. Notes of some East African species of *Aframomum* (Zingiberaceae). *Kew Bulletin* 31: 263–271.
2. Lock, J.M. 1997. Zingiberaceae. In: Edwards, S., Demissew, S., Hedberg, I. (eds). *Flora of Ethiopia and Eritrea*, Vol. 6, pp. 324–329. National Herbarium, Addis Ababa and University of Uppsala, Uppsala.
3. Poulsen, A.D., Lock, J.M. 1997. New species and new records of Zingiberaceae and Costaceae from tropical East Africa. *Kew Bulletin* 52: 601–616.
4. Jansen, P.C.M. 1981. Spices, condiments and medicinal plants in Ethiopia, their taxonomy and agricultural significance. Agricultural Research Reports 906. Centre for Agricultural Publishing and Documentation, Wageningen.
5. Demissew, S. 1993. A description of some essential oil bearing plants in Ethiopia and their indigenous uses. *Journal of Essential Oil Research* 5: 465–479.
6. Biftu, T. 1981. Essential oil composition of *Aframomum korarima* (seeds). *Journal of Chromatography* 211: 280–283.
7. Abegaz, B., Asfaw, N., Lwande, W. 1994. Chemical constituents of the essential oil of *Aframomum corrorima* from Ethiopia. *Sinet: Ethiopian Journal of Science* 17: 145–148.
8. Başer, K.H.C., Kürkçüoğlu, M. 2001. The essential oils of *Aframomum corrorima* (Braun) Jansen and *A. angustifolium* K.Schum. from Africa. *Journal of Essential Oil Research* 13: 208–209.



Fruits and seeds of Ethiopian cardamom or *korarima* (*Aframomum corrorima*)



Flowering plant (*A. corrorima*)



Ethiopian cardamom: ripe or near-ripe seeds of *A. corrorima*



Flowers (*A. corrorima*)



Leaves (*A. corrorima*)

Ocimum basilicum

basil • sweet basil

Ocimum basilicum L. (Lamiaceae); *luo le, yu xiang cai* (Chinese); *basilic* (French); *Basilikum* (German); *babui tuls* (Hindi); *basilico* (Italian); *bajiru* (Japanese); *kemangi, selaseh* (Malay); *alfavaca* (Portuguese); *albahaca* (Spanish); *horapha* (Thai)

DESCRIPTION Sweet basil leaves are highly aromatic, usually with a rich, spicy aroma but sometimes with lemon, rose, camphor, cinnamon, woody or fruity aromas¹.

THE PLANT A robust, leafy annual (up to 0.7 m) with soft-textured, hairless leaves and small white flowers. The numerous hybrids, polyploids and cultivars often differ only in their volatile compounds¹⁻⁵. Holy basil or *tulsi* (*O. tenuiflorum*, previously *O. sanctum*)⁶, is a short-lived perennial from India and Malaysia with hairy stems and leaves. Thai basil is a form with brightly coloured bracts. Hoary basil is *O. americanum* (previously *O. canum*)⁶, a perennial African species with hairy stems and calyces.

ORIGIN Tropical Asia⁶. Cultivated since ancient times in India, the Near East, North Africa and later in Europe.

CULTIVATION Basil is easily grown from seeds but warm conditions are required. Plant out in rich, well-drained soil at a spacing of 0.3 m (1 ft).

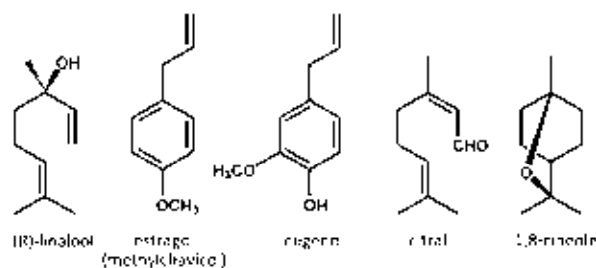
HARVESTING Fresh leaves are harvested regularly to encourage new growth. Drying may result in a loss of flavour – preservation in olive oil is a better option.

CULINARY USES Chopped leaves are added to salads, soups, omelettes, sauces, stuffings, meat dishes and pastas. The flavour of sweet basil

goes well with tomato salad or any tomato dish. Especially famous is the Italian *pesto*, a sauce originating in Genoa made from fresh basil pounded with garlic, parmesan and olive oil. A similar condiment (*pistou*) is made in Provence. Thai basil is popular in Vietnamese and Thai cooking and is added to curries, salads and stir-fries. In Indian cooking, holy basil is mostly added to fish, poultry and meat dishes and is always cooked to release the flavour.

FLAVOUR COMPOUNDS The traditional sweet basil aroma is due to linalool, methylchavicol and/or 1,8-cineole¹⁻⁵. The sweetness is ascribed to methylchavicol (=estragole), a phenylpropanoid considered safe only when used in small amounts⁷. The aroma of some cultivars is due to eugenol (clove-like) or citral (lemon-scented)¹.

NOTES Basil is a traditional tonic, antiseptic, antispasmodic, diuretic and digestive medicine⁸.



1. Simon, J.E., Morales, M.R., Phippen, W.B., Vieira, R.F., Hao, Z. 1999. Basil: a source of aroma compounds and a popular culinary and ornamental herb. In: Janick, J. (ed.), Perspectives on new crops and new uses. ASHS Press, Alexandria, USA.
2. Paton, A. 1992. A synopsis of *Ocimum* L. (Labiatae) in Africa. *Kew Bulletin* 47: 403–435.
3. Paton, A., Putievsky, E. 1996. Taxonomic problems and cytotoxic relationships between varieties of *Ocimum basilicum* and related species (Labiatae). *Kew Bulletin* 51: 1–16.
4. Grayer, R.J., Kite, G.C., Goldstone, F.J., Bryan, S.E., Paton, A., Putievsky, E. 1996. Intraspecific taxonomy and essential oil chemotypes in sweet basil, *Ocimum basilicum*. *Phytochemistry* 43: 1033–1039.
5. Telci, I., Bayram, E., Yilmaz, G., Avci, B. 2006. Variability in essential oil composition of Turkish basil (*Ocimum basilicum* L.). *Biochemical Systematics and Ecology* 34: 489–497.
6. Mabberley, D.J. 2008. Mabberley's Plant-book. Cambridge University Press, Cambridge.
7. European Medicines Agency. 2005. Public statement on the use of herbal medicinal products containing estragole. EMEA, London.
8. Van Wyk, B-E., Wink, M. 2004. Medicinal plants of the world. Briza Publications, Pretoria.



Fresh leaves of sweet basil



Dried basil



Holy basil (*O. tenuiflorum*)



Hoary basil (*Ocimum americanum*)



Purple basil (*O. basilicum* var. *purpurascens*)