

Spices Bibliography - 1990 (Part I)

Compiled by : P AZGAR SHERIFF
National Research Centre for Spices
Calicut-673 012 India

NOTE:

This SPICES BIBLIOGRAPHY is published to help spices workers who may not have approach to good library facilities. We tried to make it as complete as possible, but there may be omissions. We welcome the readers to point out omissions, if any, so that we can keep on improving.

Editor

Spices - General

- Agarwal S & Sharma RK 1990 Variability in quality aspect of seed spices and future strategy. Indian Cocoa, Arecanut and Spices Journal 13: 127-130
- Akgul A & Kivane M 1990 Growth of *Staphylococcus aureus* Rureus in Kofte, a Turkish ground meat product containing laser trilobum spice. J. Food Safety 10(1) : 11-21
- Bahk J, Yousef A E & Marth E H 1990 Behaviour of *Listeria monocytogenes* in the presence of selected spices. Lebensmittel-wissenschaft + Technologie 23(1) : 66-70
- Bhandari N 1990 Spices for beauty and body care. Spice India 3(9) : 13-14
- Chandrashankar K M 1990 Tavernier on spices. Indian Spices 27(1) : 2-5
- Chatterjee D C 1990 Inhibition of fungal growth and infection in maize grains by spice oils. Letters on Applied Microbiology 11(3) : 148-152
- Chelladurai A S S 1990 Spices in Homeopathy. Spice India 3(4) : 6-7
- Cherian A 1990 Indian spices in U S markets. Spice India 3(1) : 17-20
- Devakaran D 1990 Developing export of value added spice products. Spice India 3(9) : 1516
- Devakaran D 1990 Developing export of value added spice products. Spice India 3(10) : 5-8
- Edison S 1990 Co-ordinated research on spices with special reference on seed spices. Indian Cocoa, Arecanut and Spices Journal 13 : 124-127
- Edison S & Johny A K 1990 New varieties to improve productivity of seed spices. Indian Cocoa, Arecanut and Spices Journal 13 : 121-124
- Geetha G S & Reddy T K R 1990 *Aspergillus flavus* Link and its occurrence in relation to other Mycoflora on stored spices. Journal of Stored Product Research 26(4) : 211-215
- George C K 1990 India the best source for spices. Indian Spices 27(3) : 7-12
- Harada K 1990 Attraction activities of spices for oriental weather fish and yellow tail. Nippon Suisan Gakkaish 56 : 2029-2035
- Islam S N, Ahsan M & Ferdous A J 1990 In vitro antibacterial activities of commonly used spices. Bangladesh Journal of Botany 19(1): 99-103
- Ismail A & Pierson M D 1990 Inhibition of growth and germination of *C.botulinum* 33A, 40 B and 1623 E by essential oil of spices. Journal of Food Science 55 : 1676-1679
- Jahnke K 1990 From the point of view of the spice sector. Fleischwirtschaft 70: 1411-1412

Spices Bibliography

- John K 1990 Gallery of spices and herbs. Indian Spices 27(2) : 17-27
- John K 1990 Gallery of spices and herbs-II. Indian Spices 27(3) : 25-34
- John K 1990 The gallery of spices and herbs-III. Indian Spices 27(4) : 36-46
- Kachru R P, Patil R T & Srivastava P K 1990 Post harvest operations of minor spices. Spice India 3(12) : 13-19
- Kaphalia B S *et al* 1990 Organo chlorine pesticide residues in different Indian cereals, pulses, spices, vegetables, fruits, milk, butter, dehi, ghee and edible oils. JAOAC 73: 502-509
- Kivanc M & Akgul A 1990 Mould growth on black table olives and prevention by sorbic acid, methyleugenol and spice essential oil. Nahrung 34(4) : 369-375
- Koshy P K & Bridge J 1990 Nematode parasites of spices. In plant Parasitic Nematodes in Subtropical and Tropical Agriculture, Wallingford, UK; CAB International 557-582
- Kuruvilla K M, Priyadarshan P M & Madhusoodhanan K J 1990 Leafy Spices. Spice India 3(4); 16-19
- Lange A K 1990 New herbs and spices for meat processing. Die Lebensmittel industri 37(2):59-60
- Mirna A, Ghods A, Vaselsky J & Schelenz R 1990 The rapid determination of strontium -90 - Investigation in mechanically deboned meat and spices. Die Fleischwirtschaft 70(6):710-713
- Nair K 1990 Classification of spices. Spice India 3(6) : 14-16
- Ney K A 1990 Aromagramms of spices (in German). Alimenta 29(6) : 117-127
- Ondarza M & Sanchez A 1990 Steam distillation and supercritical fluid extraction of some Mexican spices. Chromatographia 30(1-2) : 16-18
- Philip T E 1990 Spices for food with body and soul. Indian Spices 27(4) : 3-18
- Rema J & Krishnamoorthy B 1990 Vegetative propagation of tree spices. Spice India 3(5): 10-13
- Sahni J 1990 Spice Route. Indian Spices 27(3) : 4-7
- Schuttler C & Bogi K W 1990 Chemical, sensory and toxicological investigations into irradiated spices and dried vegetables. Die Fleischwirtschaft 70(4) : 431-441
- Sharma G K & Arya S S 1990 Effect of spices, additives and antioxidant oils on analysis of sorbic acid in foods. Journal of Food Science and Technology, Mysore 27 : 50-52
- Sharma R N & Prasad R 1990 Relative performance of various seed spices under different dates of planting. Indian Cocoa, Arecanut and Spices Journal 14(2) : 78-81
- Singhal R S & Kulkarni P R 1990 Detection of adulteration of the spice poppy seeds (*Papaver somniferum*) with *Amaranthus paniculatus* (Rajgeera) seeds. Journal of Food Quality 13(5) : 375
- Sjoberg A M *et al* 1990 Methods for detection of irradiation of spices. Zeitschrift Fur Lebensmittel Untersuchung und Forschung 190(2) : 99-103
- Sjovall O *et al* 1990 The effect of gamma irradiation on some pure aroma compounds on spices. Zeitschrift Fur Lebensmittel Untersuchung und Forschung 191(3) : 181-184
- Tietz V & Thomann R 1990 The profile analysis - Method of the sensoric evaluation of spices. Lebensmittel industri 37(5) : 202-205
- Trumble J T 1990 Vegetable insect control with minimal use of insecticides. Hort Science 25 : 159-164
- Uchiyama S, Kawamura Y & Saito Y 1990 Identification of r-irradiated spices by electron spin resonance (ESR) spectrometry. Journal of Food Hygienic Society of Japan 31(6): 499-508
- Umadevi I & Daniel M 1990 Phenolics of some fruit spices of the Apiaceae. National Academy Science Letters 13(12) : 439-443
- Viju Ipe C 1990 Growth and instability in production of spices in Kerala. Journal of Plantation Crops 18 : 96-105
- Warrier P K 1990 Spices in Ayurveda. Spice India 3(6) : 2-6

Black Pepper

- Anandaraj M & Sarma Y R 1990 A simple baiting technique to detect and isolate *Phytophthora capsici* (*P. palmivora* Mf4) from the soil. *Mycological Research* 94 : 1003-1004
- Elizabeth K G P, Thomas K G 1990 New Concepts in Pepper Cultivation. *Pepper News* 14: 3-7
- Geetha CK & Nair P C S 1990 Effect of plant growth regulators and zinc on spike shedding and quality of pepper. *Pepper News* 14(10) : 5-7
- Geisler J G & Gross G G 1990 The biosynthesis of piperine in *Piper nigrum*. *Phytochemistry* 29(2): 489-492
- Gopalam A, Zachariah J & Babu K N 1990 Effect of different methods of white pepper preparation on the chemical and aroma quality in selected cultivars of *Piper nigrum* L. *Indian Perfumer* 34(2) : 152-156
- Hussain N I, John M D & Adinarayanaiah C L 1990 A rapid screening method for the detection of ethylene dibromide in black pepper (whole). *Spice India* 3(5) : 8-9
- Hali R 1990 Pepper brings new wave of prosperity in Malanads of Karnataka. *Spice India* 3(12) : 12
- Kachru K P, Patil R T & Srivastava P K 1990 Post harvest technology of black pepper. *Spice India* 3(8) : 12-16
- Madhusoodhanan K J *et al* 1990 A cost effective method for the production of white pepper. *Spice India* 3(2) : 5-9
- Mathai C K & Nair B P 1990 Biomass production levels in relation to economic yield in black pepper varieties. *Journal of Plantation Crops* 18 : 125-128
- Nawale R N & Salvi M J 1990 Panniyur-1, a promising pepper variety for warm and humid climate of Konkan region (Maharashtra). *Indian Cocoa, Arecanut and Spices Journal* 14(2): 55-58
- Nirmala Menon A, Thomas P P & Bhat A V 1990 A study on shelf life of packed white pepper powder. *Indian Spice* 27(4) : 30-35
- Pillay P S & Ranjith A M 1990 Rapid multiplication of pepper vines. *Spice India* 3(6) : 17-18
- Prakashan V & Subbaraja K T 1990 Quick wilt - threat to pepper cultivation in lower Palneys. *Spice India* 3(3) : 11-13
- Prakashan V, Subbaraja K T & Bhakthavatsalu C M 1990 Mosaic disease - a new record in black pepper in lower Palneys. *Indian Cocoa, Arecanut and Spices Journal* 13(3) : 104
- Ravindran P N 1990 Ecological and morphological notes on *Piper* spp. from the Silent Valley Forests, Kerala. *Journal of Bombay Natural History Society* 87 : 421-427
- Santha A M, Shylaja S & Asan R B 1990 Adoption barriers for improved technologies for black pepper. *South Indian Horticulture* 38(5) : 286-291
- Sherief A K 1990 Bush pepper for homestead cultivation. *Spice India* 3(6) : 11
- Sowbhagya H B *et al* 1990. Stability of piperine in different solvent and its spectrophotometric estimation. *Indian Spices* 27(1) : 21-24
- Varghese J 1990 Solubilised, homogenised and emulsified black pepper oleoresin. *Pepper News* 14(3) : 3-5

Basil

- Charles D J & Simon J E 1990 Comparison of extraction methods for the rapid determination of essential oil content and composition of Basil. *Journal of the American Society for Horticultural Science* 115(3) : 458-462
- Jankovsky M *et al* 1990 Volatile substance in Basil (*Ocimum gratissimum* L). *Sbornik UVTYZ, Zahradnictvi* 17(1) : 59-68
- Kevin W & Thomas M 1990 Basil Chlorosis : A physiological disorder in CO₂-enriched atmospheres. *Plant Diseases* 74(2) : 171-173

Chillies

- Anderson J, Malcollum G & Roberts W 1990 High temperature acclimation in pepper leaves. *Hort Science* 25(10) : 1272-1274
- Atanda O O, Akano D A & Afolabi J F 1990 Mycoflora of dry 'tatase' pepper (*Capsicum annum* L) stored for sale in Ibadan markets. *Letters in Applied Microbiology* 10(1): 35-39
- Bar-Tal A, Bar-Yosef B & Kafkafi U 1990 Pepper seedling response to steady and transient nitrogen and phosphorus supply. *Agronomy Journal* 82(3) : 600-606
- Bhagyalakshmi P V, Ravishankar C & Subrahmanyam D 1990 Study on heritability, genetic advance and character association in Chilli. *South Indian Horticulture* 38(1) : 15-18
- Biggs K J & Fry S C 1990 Solubilization of covalently bound extension from *Capsicum* cell walls. *Plant Physiology* 92(1) : 197-204
- Brackett R E 1990 Influence of modified atmosphere packaging on the microflora and quality of fresh bell peppers. *Journal of Food Protection* 53(3) : 255-257
- Bradford K J, Steiner J J & Trawatha S E 1990 Seed priming influence on germination and emergence of pepper seed lots. *Crop Science* 30 : 718-721
- Brechelt A 1990 Effect of different organic manures on the efficiency of V A Mycorrhiza. *Agriculture, Ecosystems and Environment* 29(1-4) : 55-58
- Cervantes-Cervantes M, & Price C A *et al* 1990 Chr A is a carotenoid binding protein in chromoplasts of *Capsicum annum*. *Plant Physiology* 92(4) : 1241-1243
- Coniella C, Errico A & Saccardo F 1990 Cytogenetic and isozyme studies of wild and cultivated *Capsicum annum*. *Genome* 33 : 279-282
- Csizinszky A A 1990 Response of 2 Bell Pepper (*Capsicum annum* L) cultivars to foliar and soil applied biostimulants. *Soil and Crop Science Society of Florida Proceedings* 49 : 199-204
- Deciyanto S & Elly A W 1990 Preliminary study on the egg-parasitoids of Pepper - Bug (*Dasyneus piperis china*). *Pepper News* 14(6) : 6-9
- Decoteau D R, Kasperbauer M J & Hunt P G 1990 Bell pepper and plant development over mulches of diverse colors. *Hort Science* 25(4) : 460-462
- Eduado A 1990 Chromosome studies on *Capsicum (Solanaceae)* 1 Karyotype analysis in *C. chacoense*. *Brittonia* 42 : 147
- Edwards S J, Colquhoun E Q & Clark M G 1990 Levels of pungent principles in chilli sauces and capsicum fruit in Australia. *Food Australia* 42 : 432-438
- Garcia Pardo E 1990 Mechanical harvesting of *Capsicum* : a study of the variable costs for different factors. In *Proc. of the 22nd International Conference on Agricultural Mechanization, Zaragoza, Spain 27-30 March 90 Volume I*
- Gunn L V & Paes R D 1990 *Capsicum* Yellows - A disease induced by a Luteovirus in glasshouse peppers in Australia. *Journal of Phytopathology* 129 : 210-217
- Haghuys P 1990 *Capsicums*. A well balanced crop load and drip irrigation in the night to combat blossom end rot. *Groenten en Fruit* 45(27) : 45
- Hamilton P B, Tirado F J & Gracia-Hernandez F 1990 Deposition in egg yolks of the caroteneoids from saponified and unsaponified oleoresin of Red Pepper fed to laying hens. *Poultry Science* 69 : 462-471
- Heine H 1990 Yield and quality of pepper cultivars for cultivation under glass. *Gemuse* 26(6): 304-305
- Hendrickx J M H & Wierenga P J 1990 Variability of soil water tension in a trickle irrigated Chilli pepper field. *Irrigation Science* 11(1) : 23-30
- Hubert L 1990 *Capsicums*. V-System with *Capsicums* : Clear advantages of the additional crop is sufficient. *Groenten en Fruit* 45(45) : 32-33
- Hwang B K *et al* 1990 An ultrastructural study of the effect of Metalaxyl on *Phytophthora capsici* infected stems of *Capsicum annum*. *Pesticide Science* 29 : 151-163
- Isidoro E, Cotter D J & Southward G M 1990 A comparison of colour loss of Red Chilli Pepper pods on or off the plant and during storage as powder. *Hort Science* 25 : 954-956

- Izumitani Y, Yahara S & Nohara T 1990 Novel acyclic diterpene glycosides, capsianosides A-F and I-V from Capsicum plants (*Solanaceous species*XVI). Chemical and Pharmaceutical Bulletin 38: 1299-1307
- Johnson T S, Ravishankar G A & Venkataraman L V 1990. In vitro capsaicin production by immobilized cells and placental tissues of *Capsicum annuum* L grown in liquid medium. Plant Science 70 : 223-231
- Kachru R P & Srivastava P K 1990 Status of Chilli Processing. Spice India 3(2) : 10-17
- Kandaswamy C, Mohanasundaram M & Karuppuchamy P 1990 Evaluation of insecticides for the control of the thrips *Scirtothrips dorsalis* Hood on chillies. Madras Agricultural Journal 77(3 & 4) : 169-172
- Kanahama K, Saito T & Qu T H 1990 Floral leaf arrangement and vascular system in the fruits of Tomato and Pepper (Japanese). Journal of Japanese Society for Horticultural Sciences 58 : 945-951
- Kawai A & Kitamura C 1990 Studies on population ecology of *Thrips palmi* Karny 18. Evaluation of effectiveness of control methods of thrips on egg plant and sweet pepper using a simulation model. Applied Entomology and Zoology 25 : 161-175
- Khan F A 1990 Host status of commonly grown cultivars of chillies (*Capsicum frutescens*) and sweet pepper (*C. annuum*) to the root knot nematode (*Meloidogyne incognita*) in Northern Nigeria. Tropical Pest Management 36 : 329-332
- Lakshmi N, Prakash N S & Harini I 1990 Genetic polymorphism in chillies. Spice India 3(3): 13-18
- Lankroo G M, Sharma P P & Arya P S 1990 Chemical weed control in Bell Pepper. Indian Cocoa, Arecanut and Spices Journal 14(2) : 81-84
- Leskovar D I, Contcliffe D J & Stoffella P J 1990 Root growth and root-shoot interaction in transplants and direct seeded pepper plants. Environmental and Experimental Botany 30(3) : 349-354
- Liu W *et al* 1990 Agrobacterium induced gall formation in Bell Pepper (*Capsicum annuum* L) and formation of shoot-like structures expressing introduced genes. Plant Cell Reports 9: 360-365
- Livneh O *et al* 1990 RFLP analysis of a hybrid cultivar of pepper (*Capsicum annuum*) and its use in distinguishing between parental lines and in hybrid identification. Seed Science and Technology 18 : 209-215
- Lokesh S & Shetty H S 1990 In vitro screening of chilli seed samples for *Colletotrichum dematiium* and its control. Indian Journal of Agricultural Sciences 60 : 489-491
- Lu G H *et al* 1990 'Changjiao' hot peppers are nonclimacteris. Hort Science 25 : 807
- Marshall D E, Pickett M G & Esch T A 1990 Using air to convey mechanically harvested peppers. Transactions of the ASAE 33(1) : 47-50
- Martinezsanchez F, Gimenez J L & Martinezcanadas M A 1990 Micronutrient composition in several portions of capsicum plants and their relation to red fruit colour. Acta Alimentaria 19 : 177-187
- Mary S S & Balakrishnan R 1990 Effect of irrigation, nitrogen and potassium on pod characters and quality in Chilli CV K.2. South Indian Horticulture 38(2) : 86-90
- Mitchell G E, Mc Lauchlan R L & Beattie T R 1990 Effect of gamma irradiation on the carotene content of Mangoes and Red Capsicums. Journal of Food Science 55 : 1185-1187
- Nabhan G P, Slater M & Yarger L 1990 New crops for small farmers in marginal lands? Wild chillies as a case study. In Agroecology and Small Farm Development (ed. by Altieri, M A, Hecht, S B) CRC Press
- Natarajan S 1990 Standardisation of nitrogen application for chilli grown under semi dry condition. South Indian Horticulture 38(6) : 315-319
- Nielsen T H & Veierskov B 1990 Regulation of carbon partitioning in source and sink leaf

- parts in sweet pepper plants. Role of fructose 2,6-bisphosphate. Plant Physiology 93(2): 637-641
- Ochoa-Alejo N & Ireta-Moreno L 1990 Cultivar differences in shoot forming capacity of hypocotyl tissues of chilli. Scientia Horticulturae 42(1-2) : 9-21
- Ortiz R & Delafra L F D 1990 Use of descriptors in characterising lines of the genus Capsicum (in Spanish). Turrialba 40(1) : 112-118
- Padgett G B *et al* 1990 Quantification of disease resistance that reduces the rate of tobacco etch virus epidemics in Bell Pepper. Phytopathology 80(5) : 451-455
- Payero J O, Bhangoo M S & Steiner J J 1990 Nitrogen fertilizer management practices to enhance seed production by 'Anaheim Chilli' peppers. Journal of the American Society for Horticultural Science 115(2) : 245-251
- Rajagopal 1990 Marketing of chillies in Tamil Nadu - a case study. Indian Cocoa, Arecanut and Spices Journal 14(1) : 25-28
- Rajamani K, Sundararajan S & Veeraragavathatham D 1990 Effect of triacontanol, 2,4-D and boron on the yield of certain Chilli (*Capsicum annuum* L) cultures. South Indian Horticulture 38(5) : 253-258
- Rao G R, Rao H G V & Sujatha T 1990 Rate of fruit development and dry matter accumulation in Chilli cultivars. South Indian Horticulture 38(4) : 191-193
- Roest J van Der, Boesten M & Hendriks T 1990 Capsicums : packing in nets leads to damage of fruits. Groenten en Fruit 45(47) : 26-27
- Roychoudhury A, Chatterjee R & Mitra S K 1990 Effect of different doses of nitrogen, phosphorus, potassium, magnesium, calcium and iron on growth and development of chilli. Indian Cocoa, Arecanut and Spices Journal 13(3) : 96-100
- Sahoo S C, Mishra S N & Mishra R S 1990 Association of traits in segregating population of chilli (*Capsicum annuum*). The Indian Journal of Agricultural Sciences 60: 233-237
- Saimmaime I, Coulomb C & Coulomb P J 1990 Evidence for Cinnamate 4-Hydroxylase activity in *Capsicum annuum* leaves (French). Plant Physiology and Biochemistry 28 : 323-333
- Salgado-Garciglia R & Ochoa-Alejo M 1990 Increased capsaicin in PFP-resistant cells of chilli pepper (*Capsicum annuum* L). Plant Cell Reports 8(10) : 617-621
- Sande J & Van de 1990 Capsicums. With rockwool growers using warm air heating can also follow suit. Groentenen Fruit 45(26) : 32-33
- Shah D M & Fontenet J F 1990 Gene transfer of multiple flowers and pubescent leaf from *Capsicum chinense* into *Capsicum annuum* backgrounds. Journal of the American Society for Horticultural Science 115 : 499-503
- Shearer S A & Payne F A 1990 Machine vision sorting of Bell Peppers. In Food Processing Automation. Proc. 1990 Conference Lexington, Kentucky, USA 6-8 May 1990
- Shibao, Manobu *et al* 1990 Seasonal changes and infestation sites of the chilli thrips, *Scirtothrips dorsalis* on grapes. Japanese Journal of Applied Entomology and Zoology 34 : 145-153
- Silva H M E, Rascop S B & Laria S T 1990 Isolation of fungi, production of Aflatoxins by *Aspergillus* sp and Aflatoxins in samples of Red Pepper (*Capsicum sp*) commercialised in Goiania, Brazil (in Portuguese). Revista de Microbiologia 2 : 149-153
- Singh R V & Naik L B 1990 Effect of nitrogen, phosphorus and plant spacing on sweet pepper. Haryana Journal of Horticultural Sciences 19(1-2) : 168-172
- Sowbhagya H B *et al* 1990 Stability of piperine in different solvents and its spectrophotometric estimation. Indian Spices 27(1) : 21-24
- Srivastava R K, Verma R A & Tripathi M P 1990 Screening of chilli cultivars for dehydration with special reference to its use in spices. Spice India 3(4) : 11-13
- Subhani P M, Sankar C R & Narayana N 1990 Effect of graded levels and time of application of N and K₂O on flowering, fruiting and yield of irrigated chilli. Indian Cocoa, Arecanut and Spices Journal 14(2) : 70-75

- Subramanian K S & Vanangamudi K 1990 Effect of irrigation and nitrogen on fruit yield of Chillies. *Spices India* 3(7) : 5-6
- Sumona Mukherjee & Sharma A K 1990 Intraspecific variation of nuclear DNA in *Capsicum annum* L. *Proceedings of the Indian Academy of Sciences (Plant Sciences)* 100(1) : 1-7
- Sumathykutty M A *et al* 1990 Chemical analysis of some new varieties of pepper from Andhra Pradesh and Assam. *Indian Cocoa, Arecanut and Spices Journal* 14(2) : 58-61
- Tewari V P 1990 Development of high capsiacin chillies (*Capsicum annum* L) and their implication for the manufacture of export products. *Journal of Plantation Crops* 18 : 1-13
- Thiagarajan C P 1990 Influence of NPK on the yield and quality of chilli seed. *South Indian Horticulture* 38(3) : 123-128
- Uffelen J. van Hogenden K L & Steenberg P 1990 Capsicums. Choice of cultivar with autumn capsicum. Newcomers' predominate. *Groenten en Fruit* 45 : 46-47
- Valverde R A *et al* 1990 Indigenous double stranded RNA from pepper (*Capsicum annum*). *Plant Science* 67 : 195-203
- Whitehead I Met *et al* 1990 Synthesis of (+)-5-epiaristolochene and (+)-1-deoxycapsidiol from capsidiol. *Phytochemistry* 29(2) : 479-482
- Yagishita N, Ohashi H & Yamashita K *et al* 1990 Genetic nature of low capsaicin content in the variant strains induced by grafting in *Capsicum annum* L. *Euphytica* 46 : 249-253
- Yazawa S, Sato T & Namoiiki T 1990 Dwarfism and a virus like syndrome in interspecific hybrids of genus *Capsicum* (Japanese). *Journal of Japanese Society for Horticultural Science* 58 : 935-945

Cardamom

- Aradhani K K *et al* 1990 Studies on the performance of clonal and seedling progenies of Mudigere-1 Cardamom. *Current Research* 18(2) : 25
- Bhai S & Thomas J 1990 Rhizome and seedling rot diseases of Small Cardamom and their management techniques. *Spice India* 3(6) : 7-10
- Chakravarthy A K & Khan M M *et al* 1990 Insect and non-insect pests management in Cardamom. *Spice India* 3(2) : 19-24
- Chandramony D & Nayar N K 1990 Correlation and path analysis in Cardamom. *Indian Journal of Agricultural Science* 60(2) : 140-143
- George C K 1990 Production and export of Cardamom in Guatemala. *Spice India* 3(9) : 2-6
- Gopal R, Chandramony D & Nayar N K 1990 Correlation and path analysis in Cardamom. *Indian Journal of Agricultural Science* 60(2) : 140-142
- Gopalakrishnan M *et al* 1990 Studies on cryogenic grinding of Cardamom. *Spice India* 3(7):713
- Gopalakrishnan M, Narayanan C S & Grenz M 1990 Non saponifiable lipid constituents of Cardamom. *Journal of Agriculture and Food Chemistry* 38 : 2133-2137
- Kuriakose K P & Sadhankumar P G 1990 PV-1 A high yielding variety of Cardamom (*Elettaria cardamom* M). *Journal of Plantation Crops* 218 : 122-124
- Roy B J 1990 Large Cardamom exports. *Spice India* 3(12) : 26-28
- Sangakkara V R 1990 Relationship between storage and germinability of Cardamom. *Journal of Agronomy and Crop Science* 164(1) : 16-20
- Sankaranarayana M L 1990 Large Cardamom - chemistry, technology and uses. *Spice India* 3(8) : 17-25
- Sankaracharya N B, *et al* 1990 Large Cardamom - chemistry, technology and uses. *Indian Spices* 27(3):12-21
- Sridharan S, *et al* 1990 Seasonal incidence of Cardamom thrips in Shevroy Hills. *Spice India* 3(6) : 12-13

- Sridharan S, Natarajan N & Thamburaj S *et al* 1990 Effect of planting density on capsule damage by *Sciothrips cardamomi* in Cardamom. *South Indian Horticulture* 38(2) :120-122
- Stone G N & Willmer P G 1990 Pollination of Cardamom in Papua New Guinea. *Journal of Agricultural Research* 28(4) : 228
- Suseela Bhai & Joseph Thomas 1990 Rhizome and seedling rot diseases of small cardamom and their management techniques. *Spice India* 3(6) : 7-10
- Thomas E K, Indiradevi P & Thomas K J 1990 Performance of Indian Cardamom - an analytical note. *Spice India* 3(6) : 19-23
- Varadarasan S *et al* 1990 Integrated management of Cardamom root grubs. *Spice India* 3(8) : 9-11
- Vasanthakumar K & Sheela V L 1990 Sprinkler irrigation in Cardamom plantations. *Spice India* 3(3):5-11

Cinnamon & Cassia

- Perry P A, Dean B S & Krenzelok E P 1990 Cinnamon oil use by adolescents. *Toxicology* 32(2):162-164
- Regupathi A, Doraisamy P & Sekar K 1990 Residues of monocrotophos in Cinnamon. *Spice India* 3(3):18-21

Celery

- Bartos J & Holik 1990 The effect of spacing on the yield, quality, storability and market price of celeriac. *Sbornik UVTIZ, Zahradnictvi* 17(3) : 189-195
- Becker J O *et al* 1990 Effect of rhizobacteria and metham - sodium on growth and root microflora of celery cultivars. *Phytopathology* 80(2) : 206-211
- Beriage A G, Churchill D B & Bilsland D M 1990 Electrostatic separation to improve germination of Carrot and Celery seed. *Transaction of the ASAE* 33 : 597-601
- Davis J M & Loescher W H 1990 [¹⁴C] assimilate translocation in the light and dark in Celery (*Apium graveolens*) leaves of different ages. *Physiologia plantarum* 79 : 656-663
- Donovan A *et al* 1990 Ultrastructure of infection of excised leaves of Celery by *Septoria apiicola*, casual agent of leaf spot disease. *Mycological Research* 94(Pt:4) : 548-553
- Fredy A *et al* 1990 Effect of nitrogen fertilizers on Celery volatiles. *Journal of Agricultural and Food Chemistry* 38(1) : 220-226
- Fredy A, Van Wassanhove, Patrick Dirnck O C, Gorges Vulsteke 1990 Aromatic volatile composition of celery and celeriac cultivars. *Hort Science* 25 : 556-560
- Halim A F *et al* 1990 Analysis of celery fruit oil and investigation of the effect of storage. *Egyptian journal of Pharmaceutical Sciences* 31(1-4) : 107-113
- Healthpagliuso L & Rappaport L 1990 Somaclonal variant UC - T3. The expression of *Fusarium* wilt resistance in progeny arrays of Celery, *Apium graveolens* L. *Theoretical and Applied Genetics* 80 : 390-394
- Iqbal R S 1990 Studies on vegetables: Investigation of water, oxalate and sodium hydroxide soluble Celery (*Apium graveolens*) polysaccharides: celery Arabinogalactan. *Journal of Agricultural and Food Chemistry* 38(1) : 38-41
- Iqbal R S 1990 Studies on vegetables: Investigation of water, oxalate, and sodium hydroxide soluble celery (*Apium graveolens*) polysaccharides: pectic polysaccharides. *Journal of Agricultural and Food Chemistry* 38(1) : 70-75
- Shibata H *et al* 1990 Photoactive furocoumarins in diseased Celery (*Apium graveolens*). *Agricultural and Biological Chemistry* 54 : 2141-2143
- Moye H A *et al* 1990 Avermectin B1a metabolism in Celery: a residue study. *Journal of Agricultural and Food Chemistry* 38(1) : 290-297
- Nadel B L, Altman A & Ziv M 1990 Cold Storage and efficient conversion of somatic Celery embryos into transplantable plants. *Scientia Horticulturae* 44 : 9-17

- Nadel B L, Altman A & Ziv M 1990 Regulation of somatic embryogenesis in Celery cell suspensions. 2. Early detection of embryogenic potential and the induction of synchronized cell cultures. *Plant Cell Tissue and Organ Culture* 20 : 119-125
- Roelofsse E W, Hand D W & Hall R L 1990 The effects of temperature and 'night break' lighting on the development of glasshouse Celery. *Journal of Horticultural Science* 65(3) : 297-307
- Roger M 1990 Effect of dietary fibre concentrated from Celery, Parsnip and Rutabaga on intestinal function, serum cholesterol and blood glucose response in rats. *Journal of Agricultural and Food Chemistry* 38(1) : 195-200
- Sanchez C A, Burdine H W & Guzman V L 1990 Soil testing and plant analysis as guides for the fertilization of Celery on Histosoles. *Soil and Crop Science Society of Florida Proceedings*. 49 ; 69-72
- Tang J 1990 Free and glycosidically bound volatile compounds in fresh Celery (*Apium graveolens* L). *Journal of Agricultural and Food Chemistry* 38 : 1937-1941
- Wassenhove F *et al* 1990 Aromatic volatile composition of Celery and celeriac cultivars. *Hort Science* 25(5) : 556-559
- Wilhelm D, John T & Carl W 1990 Impact of atmospheric pollution on liners furanocoumarin content in Celery. *Journal of Chemical Ecology* 16 : 443-455
- Willaert G, Verloo M & Vulsteke C 1990 Influence of the cultivar on the mineral composition of Celery, celeriac and scorzonera (In Dutch). *Landbouwtijdschrift - Revue de L' Agriculture* 43 : 599

Clove

- Gopalakrishnan M, Shanti P P V & Narayanan C S 1990 Composition of Clove (*Syzygium aromaticum*) bud oil extracted using Carbon dioxide. *Journal of the Science of Food and Agriculture* 50(1) : 111-119
- Gopinath 1990 Clove - A plantation crop, *Spice India* 3(3) : 3-5
- Lomer C J *et al* 1990 Insecticide screening trials against *Hindola* spp. vectors of Sumatra disease of Cloves in Indonesia. *Annals of Applied Biology* 116, suppl April : 10-12
- Martin P J 1990 Comparison of the growth and yielding of Clove trees under different ring weeding and fertilizer regimens. *Crop Protection* 9 : 415-422
- Suharban M, Sulochana K K & Nair M C 1990 Chemical control of leaf spot disease of Clove. *South Indian Horticulture* 38(3) : 123-128

Coriander

- Agrawal S, Sharma R K & Bhat B N 1990 Quality evaluation of Coriander. *Indian Cocoa Arecanut and Spices Journal* 13 : 137-139
- Akilan V, Ramamurthy K & Karivaratharajan T V 1990 Modified tetrazolium testing and the influence of seed position in the mother plant on viability and vigour in Coriander. *Spice India* 3(7) : 18-21
- Badgujar C D & Wayhal K N 1990 Effect of soaking and wrapping seeds on germination of Coriander. *Spice India* 3(10) : 9-11
- Berges P, Pino J & Rosado A 1990 The isolation of volatile oil from Coriander fruit by stem distillation. *NAHRUNG Food* 34 : 831-835
- Koul A K, Hamal I A & Gupta S K 1990 Pollination mechanism in *Coriandrum sativum* Linn (Apiaceae). *Proceedings of Indian Academy of Sciences - Plant Sciences* 99(5) : 509
- Prakasam V *et al* 1990 Studies on the control of powdery mildew of Coriander. *Spice India* 3(10) : 17-19
- Potter T L & Fagerson I s 1990 Composition of Coriander leaf volatiles. *Journal of Agricultural Food Chemistry* 38(11) : 2054-2057
- Rahman M O, Babu R S H & Rao N S 1990 Effect of graded levels of nitrogen on growth and yield of seed and essential oil of Coriander. *Indian Cocoa Arecanut and Spices Journal*

- 13(4) : 130-133
- Rajan F S *et al* 1990 Screening Coriander lines against grain diseases. *South Indian Horticulture* 38(3) : 123-128
- Raju K V 1990 An economic analysis of cultivation and export of Coriander. *Agricultural Situation in India* 45 : 523-527
- Rohr K *et al* 1990 Analysis and evaluation of Coriander cake for ruminant diets. *Landbau Forschung Volkenro de* 40 : 133-138

Cumin

- Badr F H & Gorgiev E V 1990 Amino acid composition of Cumin seed (*Cuminum cyminum* L). *Food Chemistry* 38(4) : 273-279
- Bhati D S 1990 Effect of nitrogen and phosphorus fertilization on Cumin (*Cuminum cyminum*) on loamy sand soils 60(7) : 453-457
- Champawat R S & Pathak V N 1990 Management of cumin wilt by summer ploughing. *Indian Cocoa Arecanut and Spices Journal* 13(3) : 107-108
- Munshi A M *et al* 1990 Effect of plant density and fertilizer levels on the growth and seed yield of Black Zeera under rainfed conditions. *Indian Cocoa, Arecanut and Spices Journal* 13 : 134-137
- Ustun G *et al* 1990 Investigation of the technological properties of *Nigella sativa* (Black Cumin) seed oil. *Journal of American Oil Chemists Society* 67 : 958-961

Fennel

- Bhati D S 1990 Effect of stage of umbel picking and nitrogen fertilization of Fennel. *Indian Journal of Agronomy* 35 : 375-380
- Hunault G & Desmaret P 1990 Field assessment of somaclonal variation during somatic embryogenesis in bitter Fennel. *Bulletin de la Societe: Botanique de France* 137(3-4):45-51
- Mehta K G, Patel P G & Patel I D 1990 A new avenue of Fennel cultivation in Gujarat. *Indian Cocoa Arecanut and Spices Journal* 13 : 139-142
- Sharma R N & Prasad R 1990 Nitrogen and irrigation requirement of Fennel. *Indian Journal of Agronomy* 35 : 139-142
- Suhonen I & Kokkonen L 1990 The effect of planting date on growth, seed stalk development and yield of Sweet Fennel. *Journal of Agricultural Science, Finland* 62(3) : 237-245
- Torres M & Frutos G 1990 Logistic function analysis of germination behaviour of aged Fennel seeds. *Environmental and Experimental Botany* 30(3) : 383-390
- Vastrad A S, Holihosur S N & Basavanagoud K 1990 Occurrence of *Odynerus ovalis* sauss on fennel *Foeniculum vulgare* Miller. *Journal of Bombay Natural History Society* 87:465-466
- Verghese J 1990 Fennel in the kaleidoscope. *Indian Spices* 27(1) : 14-20
- Yadav R L & Prasad S R 1990 Effect of seed rates and row spacing on Fennel cultivars. *Indian Journal of Agronomy* 35 : 355

Fenugreek

- Abdelnabey A A & Damir A A 1990 Changes in some nutrients of Fenugreek (*Trigonella foenum-graecum* L) seeds during water boiling. *Plant Foods for Human Nutrition* 40(4) : 267-275
- Barholia A K, Bisen A L & Tiwari J B 1990 Fenugreek - a profitable spice. *Spice India* 3(5):57
- Hashmi M H & Thrane U 1990 Mycotoxins and other secondary metabolites in species of *Fusarium* isolated from seeds of Capsicum, Coriander and Fenugreek. *Pakistan Journal of Botany* 22(2) : 106-117
- Madar Z & Shomer I 1990 Polysaccharide composition of Gel fraction derived from Fenugreek and its effect on starch digestion and bile acid absorption in rats. *Journal*

- of Agricultural Food Chemistry 38(7) : 1535-1540
 Prakashan V *et al* 1990 Control of root rot disease of Fenugreek. Indian Cocoa, Arecanut and Spices Journal 14(2) : 75-78
 Provorov N A & Simarov B V 1990 Genetic variation in Alfalfa, Sweet Clover and Fenugreek for the activity of symbiosis with *Rhizobium meliloti*. Plant Breeding 105 : 300-311
 Rathore P S & Manohar S S 1990 Effect of date of sowing, nitrogen and phosphorous on quality and nodulation of Fenugreek. Indian Cocoa Arecanut and Spices Journal 13(4) : 148
 Zambou K & Spyropoulos C G 1990 D-Galactose uptake by Fenugreek Cotyledons - Effect of water stress. Plant Physiology 93(4) : 1417-1422

Ginger

- Arya P S & Rana K S 1990 Performance of Ginger varieties in Himachal Pradesh. Indian Cocoa, Arecanut and Spices Journal 14(1) : 16-20
 Balachandran S M, Bhat S R & Chandel K P S 1990 In vitro clonal multiplication of turmeric and ginger. Plant Cell Reports 8(9) : 521-525
 Balakrishnan G A 1990 Ginger from North East - new enduse development and market feasibility. Spice India 3(10) : 20-22
 Chauhan H L & Patel M H 1990 Etiology of complex rhizome rot of Ginger in Gujarat and in vitro screening of fungicides against its casual agents. Indian Journal of Agricultural Science 60(1) : 80-82
 Dohroo N P 1990 Certified seed of Ginger. Spice India 3(2) : 9-10
 Das T P M, Devadas V S & Pillai G R 1990 Efficacy of fungicides for seed treatment against pre-emergence rhizome rot of ginger. Indian Cocoa Arecanut and Spices Journal 14(1):13-16
 Endo, Kanno E & Oshima Y 1990 Structures of antifungal theptenones, gingerenones A, B, C and isogingerenone B, isolated from the rhizomes of *Zingiber officinale*. Phytochemistry 29(3) : 797-799
 Kandiah M & Spiro M 1990 Extraction of Ginger rhizome: kinetic studies with super critical carbon dioxide. International Journal of Food Science and Technology 25(3) : 328-329
 Koya K M A 1990 Role of rhizome maggot *Mimegralla coeruleifrons* Macquart in Rhizome rot of ginger. Entomon 15(1-2) : 75-79
 Korla B N, Rattan R S & Dohroo N P 1990 Effect of mulches on rhizome growth and yield of Ginger. South Indian Horticulture 38(3) : 123-128
 Makinodan Y & Hujita M 1990 Effect of the additon of slivers of Ginger on the gel strength of Kamaboko. Bulletin of the Japanese Society of Scientific fisheries 56(3) : 537-543
 Makinodan Y, Nakajawa T & Hujita M 1990 Effect of addition of powdered Ginger on gel strength of Kauboka. Journal of Japanese Society of Food Science and Technology 37:878-884
 Mohanty D C, Naik B S & Panda B S 1990 Ginger research in Orissa with special reference to its varietal and cultural improvement. Indian Cocoa Arecanut and Spices Journal 14(2) : 61-65
 Okwuowulu P A, Ene L S O & Odurukwe S O 1990 Effect of time of planting and age at harvest on the yield of the stem tuber and shoots in ginger in the rainforest zone of south-eastern Nigeria. Experimental Agriculture 26(2) : 209-213
 Oti E *et al* 1990 Effect of age of harvesting on the chemical qualities of ginger rhizomes. Beitrage zurtropischen Landwirt schaft and veterinar medizin 28(3) : 275-282
 Prem Singh Arya & Rana K S 1990 Performance of Ginger varieties in Himachal Pradesh. Indian Cocoa, Arecanut and Spices Journal 14(1) : 16-20
 Raju K V & Sreekumar B 1990 Supply response of Ginger in India - an econometric evidence. Spice India 3(2) : 24-31

- Spiro M, Kandiah M & Price W 1990 Extraction of Ginger rhizome: kinetic studies with dichloromethane, ethanol, 2-propanol and an acetone - water mixture. International Journal of Food Science and Technology 252 : 157-168
 Spiro M & Kandiah M 1990 Extraction of Ginger rhizome - partition constants and other equilibrium properties in organic solvents and in super critical carbon dioxide. International Journal of Food Science and Technology 25(5) : 566-576
 Shankaranarayana M L 1990 Feasibility of utilization of ginger from North Eastern Regions. Spice India 3(7) : 14-17
 Thomas E K, Thomas J & Indiradevi P 1990 Growth and output response of Ginger in Kerala. Spice India 3(10) : 12-16
 Valsala P A *et al* 1990 Seed storage in Ginger. Spice India 3(5) : 14-15
 Valsala P A, Prasannakumari Amma S & Sudhadevi P K 1990 Feasibility of growing Daincha in the interspace of Ginger beds. Indian Cocoa, Arecanut and Spices Journal 14(2) : 65-67
 Verghese J 1990 Mango ginger - An exotic Flavourant. Indian Spices 27(2) : 15-17
 Wu P, Kuo M C & Ho C T 1990 Glycosidically bound aroma compounds in Ginger (*Zingiber officinale* Roscoe). Journal of Agricultural Food Chemistry 38(7):1553-1556
 Yusof N 1990 Sprout inhibition by gamma irradiation in fresh Ginger. Journal of Food Processing and Preservation 14(2) : 113-123
- Garlic**
- Brewster J L & Rabinowich H D (Ed.) 1990. Onions & Allied crops vol 3 : Biochemistry, Food Science & Minor Crops. CRC Press
 Bartos J & Holik K 1990 The effect of different spacings on the yields and market price of Garlic. Shornik UVTIZ, Zahradictvi 17(3) : 197-202
 Brewster J L & Rabinowich H D 1990 Garlic Agronomy. In Onions and Allied Crops, Vol 3: CRC Press
 Croci C A, Curzio O A & Arguello J A 1990 Storage behaviour of an early Garlic (*Allium sativum* L) subject to Gamma-ray Radioinhibition. Journal of Food Processing and Preservation 14 : 107-113
 Gast R E, Liebl R A & Slife F W 1990 Wild Garlic (*Allium vineale*) control with Thifensulfuron and DPX-L5300. Weed Technology 4 : 592-598
 Ghannoum M A 1990 Inhibition of *Candida* adhesion to buccal epithelial cells by an aqueous extract of *Allium sativum* (Garlic). The Journal of Applied Bacteriology 68 : 163-171
 Halan S & Arumugam R 1990 Physiology of growth and development of Garlic. South Indian Horticulture 38(6) : 323-329
 Hwang J M & Lee B Y 1990 The effect of temperature and humidity conditions on rooting and sprouting of Garlic. Journal of the Korean Society for Horticultural Science 31(1):15-21
 Lammerink J 1990 Effect of fumigation, cold storage and fungicide treatment of planting clones on yield and quality of Garlic. New Zealand Journal of Crop and Horticultural Science 18(1) : 55-61
 Mangal J L 1990 Evaluation of Garlic cultivars for salinity tolerance. Journal of Horticultural Science 65 : 657-658
 Mueller S & Biasi J 1990 Behaviour of some Garlic cultivars planted in January in Santa Catarina State Highland. Pesquisa Agropecuaria Brasileira 25 : 783-789
 Park Y B & Lee B Y 1990 The effect of planting date on growth and bulb formation of northern and southern Garlic ecotypes in Cheju. Journal of the Korean Society for Horticultural Science 31(1) : 7-14
 Rahim M A & Fordham R 1990 Effect of shade and environmental conditions on the initiation and development of garlic clones. Scientia Horticulturae 45(1) : 21-30

- Rocha F E D & Tsujumoto T 1990 Development of a new Garlic seeder. *Pesquisa Agropecuaria Brasileira* 25 : 1085
- Sato A, Terao M & Honma Y 1990 Antibacterial action of Garlic extract on food poisoning bacteria. *Journal of the Food Hygienic Society of Japan* 31 : 328-333
- Singh U P *et al* 1990 Antifungal activity of ajoene, a constituent of Garlic. *Canadian Journal of Botany* 68 : 1354-1356
- Setty S K B & Sulikeri G S 1990 Effect of N P K fertilization on loss of weight in Garlic bulbs during storage. *Spice India* 3(1) : 9-13
- Sukias J P S & Murray B G 1990 Cytological examination of three cultivars of Garlic by C-banding and flow cytometry. *New Zealand Journal of Crop and Horticultural Science* 18(1) : 17-23
- Sundaram R *et al* 1990 Nematodes associated with garlic and vegetables in Nilgiris district. *South Indian Horticulture* 38(6) : 353
- Takagi H 1990 Garlic (*Allium sativum* L). In *Onions and Allied Crops Vol. 3*: Ed. by Brewster J L and Rabinowitch H D CRC Press
- Tariq V N & Magee A C 1990 Effect of volatiles from Garlic bulb extract on *Fusarium oxysporum* f sp *Lycopersici*. *Mycological Research* 94 : 617-621
- Ueda Y, Sakaguchi M & Airayama K 1990 Characteristic flavour constituents in water extract of garlic. *Agricultural and Biological Chemistry* 54(1) : 163-171

Mustard

- Bahi G S, Pasricha N S & Baddesha H S 1990 Sulphur nutrition of three varieties on Indian Mustard (*Brassica juncea*) at 3 stages of growth. *Indian Journal of Agricultural Sciences* 60 : 556-559
- Banuelous G S, Meek D W & Hoffman G J 1990 The influence of Selenium, salinity and Boron on Selenium uptake in Wild Mustard. *Plant and Soil* 127 : 201-207
- Bhola A L, Singh H & Yadav T P 1990 Aphids and forest pose no danger to Mustard. *Indian Farming* 39(10) : 33-35
- Bodnary K R P & Palaniswamy P 1990 Glucosinolate levels in cotyledons of Mustard *Brassica juncea* L and Rape, (*B napus* L) do not determine feeding rates of flea beetle, *Phytotreta cruciferae* (Geoze). *Journal of Chemical Ecology* 16 : 2735-2747
- Conn K L, Tewari J P & Awasthi R P 1990 A disease assessment key for *Alternaria* blackspot in Rapeseed and Mustard. *Canadian Plant Disease Survey* 70(1) : 19-23
- Friesen G H & Wall D A 1990 Wild Mustard control in Sunflower with Flurtamone. *Canadian Journal of Plant Science* 70 : 1195-1199
- Gecan S J & Bandler R 1990 : Microanalytical quality of canned Collard, Creecy, Kale, Mustard and Turnip Greens. *Journal of Food Protection* 53 : 5211-5213
- Hajjar M J & Ford J B 1990 The effect of Cypermethrin on the feeding of Mustard beetles *Phaedon cochleariae* (F). *Annals of Applied Biology* 116 : 279-286
- Hecht U & Mohr H 1990 Factors controlling Nitrate and ammonium accumulation in Mustard (*Sinapis alba*) seedlings. *Physiologia Plantarum* 78 : 379-388
- Jadhav S N & Singh N P 1990 Save mustard from insect pests. *Indian Farming* 40(6) : 19-21
- Jindal S K 1990 Heterobeltiosis for seed yield and quality traits in Indian Mustard. *Annals of Arid Zone* 29(1) : 47-51
- Kanemaru K, Takaya T & Miyamoto T 1990 Separation and quantitation of Allyl isothiocyanate in Brown Mustard and cinnamaldehyde in Cinnamon by reverse phase high performance liquid chromatography. *Journal of the Japanese Society for Food Science and Technology* 37:565-569
- Kanemaru K & Miyamoto T 1990 Inhibitory effects on the growth of several Bacteria by Brown Mustard and allyl isothiocyanate. *Journal of the Japanese Society for Food Science and Technology* 37:823-830

- Kaur S *et al* 1990 Accumulation of glucosinolates in developing Mustard (*Brassica juncea* L) seeds in response to Sulphur Application. *Plant Science* 66(2) : 181-185
- Kharodia H V & Patel A T 1990 Nutrient and spacing management in Mustard. *Gujarat Agricultural University Research Journal* 15(2) : 43-45
- Kloen H & Altieri M A 1990 Effect of Mustard (*Brassica hirta*) as a non-crop plant on competition and insect pests in broccoli (*Brassica oleracea*). *Crop Protection* 9: 90-97
- Kumar P R & Singh N P 1990 Growth analysis of Rapeseed and Mustard. *Agricultural situation in India* 44(11) : 915-921
- Kumar V 1990 Disease Management in Rapeseed and Mustard. *Spice India* 3(8) : 5-9
- Kumar V & Singh K J 1990 Technology for growing Rapeseed and Mustard. *Indian Farming* 39(10) : 6-9
- Liebman M & Robichaux R H 1990 Competition by Barley and Pea against Mustard: effects on resource acquisition, photosynthesis and yield. *Agriculture, Ecosystems and Environment* 31 : 155-173
- Love H K 1990 Development of low glucosinolate Mustard. *Canadian Journal of Plant Science* 70 : 419-425
- Love H K *et al* 1990 Genetic control of 2-propenyl and 3-butenyl glucosinolate synthesis in Mustard. *Canadian Journal of Plant Science* 70 : 425-431
- Manga V A & Sharma R 1990 Lack of functional inter-relationship between Beta-Amylase photoregulation and Chloroplast development in Mustard (*Sinapis alba* L) Cotyledons. *Plant and Cell Physiology* 31 : 167-173
- Mehta O P, Bhola A L & Bagga R K 1990 Intercropping of Indian Mustard (*Brassica juncea*) with chickpea (*Cicer arietinum*) in semi-arid tropics of North India. *Indian Journal of Agricultural Sciences* 60 : 463-466
- Minhas P S, Sharma D R & Khosla B K 1990 Effect of alleviation of salinity stress at different growth stages of Indian Mustard (*Brassica juncea*). *The Indian Journal of Agricultural Sciences* 60 : 343-347
- Minzava N A & Olsson K 1990 Studies on tropical vegetables: Part 1. Seed, amino acids, fatty acid and glycosinolate profile of Ethiopian Mustards (*Brassica carinata* Braun) (Technical note). *Food Chemistry* 35(3) : 229-237
- Merkle T *et al* 1990 Nucleotide sequence and deduced amino acid sequence of a gene encoding the 23k Da polypeptide of the oxygen evolving complex from Mustard (*Sinapis alba* L). *Plant Environment and Ecology* 14 : 389
- Mukherjee N N 1990 Physiological characters and oil content of Rapeseed and Mustard as influenced by split application of Potassium. *Environment and Ecology* 8 : 622-625
- Munshi S K *et al* 1990 Lipid biosynthesis in seeds of Mustard (*Brassica juncea*) influenced by Zinc and Sulphur deficiency. *Physiologia Plantarum* 80 : 102-109
- Pivnick K A 1990 Attraction of the Diamond back Moth (*Lepidoptera: plutellidae*) to volatiles of Oriental Mustard: The influence of age, sex and prior exposure to mites and host plants. *Environmental Entomology* 19 : 704-710
- Ronquist F & Ahman I 1990 Reproductive rate of the Indian Mustard Aphid (*Lipaphis erysimi psedobrassicae*) on different Brassica oil seeds. Comparison with Swedish strains of Mustard (*Lipaphis erysimi*) and Cabbage Aphid (*Brevicoryne brassicae*). *Annals of Applied Biology* 116 : 425-431
- Sohay S S & Prasad T 1990 The occurrence of Aflatoxins in Mustard and Mustard Products. *Food Additives and Contaminants* 7 : 509-515
- Samui R C & Roy B 1990 Effect of intercropping on yield attributes and yield of Rapeseed Mustard and Linseed. *Environment and Ecology* 8(1B) : 251-254
- Sasidhar R B, Sudershan R V & Bhat V R 1990 Rapid detection of argemone oil in Rapeseed Mustard oils with a pressurized mini column. *Journal of the American Oil Chemists Society* 65:338-340

- Samiullah N *et al* 1990 Response of 10 varieties of Mustard (*Brassica juncea* (L) Czern and Coss) to Nitrogen and Phosphorus - plant dry weight and NAR. Bangladesh Journal of Botany 19(1) : 83-87
- Schuster C & Mohr H 1990 Appearance of Nitrate Reductase messenger RNA in Mustard seedling cotyledons is regulated by Phytochrome. *Planta* 181 : 327-335
- Schuster C & Mohr H 1990 Photo-oxidative damage to plastids affects the abundance of nitrate reductase on RNA in Mustard cotyledons. *Planta* 181(1) : 125-129
- Shahidi P E & Gaboin J E 1990 Fate of Singrin in Methanol/Ammonia/water Hexane extraction of *B. juncea*, Mustard seed. *Journal of Food Science* 55 : 793-796
- Shivsankar V J, Thomes P S & Khan A A 1990 Control of Mustard Aphid (*Lipaphis erysimi*) on Chinese Cabbage (*Brassica pekinensis*). *Indian Journal of Agricultural Sciences* 60:492-494
- Sharma D P, Singh K W & Rao K V G K 1990 Response of wheat (*Triticum aestivum*) Indian Mustard (*Brassica juncea*) and Barley (*Hordeum vulgare*) to soil salinity in field. *Indian Journal of Agricultural Sciences* 60 : 588-592
- Shukla R P 1990 Spatial distribution of key pests of Mustard and their natural enemies in India. *Tropical Pest Management* 36 : 85-89
- Singh R P & Kumar A 1990 Effect of varieties and planting geometry levels on late sown Indian Mustard (*Brassica juncea*). *The Indian Journal of Agricultural Sciences* 60:392-396
- Singh B P, Singh BN & Singh A 1990 Effect of mulch and irrigation on yield of Indian Mustard (*Brassica juncea*) on dry terraces in Alfisols. *Indian Journal of Agricultural Sciences* 60:477-479
- Tiwari D P & Yadava I S 1990 Effect of feeding Formaldehyde - treated Mustard cake on nutrients utilization and blood metabolites in Buffaloes. *Indian Journal of Animal Sciences* 60: 979-984
- Tomar R K S, Tiwari K P & Mishra G L 1990 Production potential of Wheat (*Triticum aestivum*) and Indian Mustard (*Brassica juncea*) inter cropping system. *Indian Journal of Agricultural Sciences* 60 : 625-627
- Verma L S *et al* 1990 Thermophysical properties of Indian Mustard (*Brassica juncea*) seeds at different temperatures. *Indian Journal of Agricultural Sciences* 60 : 770-772
- Weber M *et al* 1990 Factors involved in the coordinate appearance of nitrate reductase and glutamine synthetase in the Mustard (*Sinapis alba* L) seedling. *Planta* 180(3) : 429-439
- Wennig A & Schafer E *et al* 1990 Temporal pattern of gene expression in cotyledons of Mustard (*Sinapis alba* L) seedling. *Botanica Acta* 103 : 240-244
- Woggon H, Macholz R & Jehle D 1990 Reaction of products of glucosinolate splitting - studies on the identification of amino acid mustard oil reaction products with particular regard to polarographic techniques. *Nahrung Food* 34 : 515-527

Nutmeg

- Ipe V C & Varghese C A 1990 Economics of Nutmeg cultivation in Kerala. *Journal of Plantation crops* 18 : 29-33
- Oberdieck R 1990 Mace and Nutmeg. *Die Fleischwirtschaft* 69(11) : 1648-1664
- Varghese CA, Ipe V C & Giridharan M P 1990 Grow Nutmeg for higher profits. *Indian Cocoa, Arecanut and Spices Journal* 14(1) : 31-33
- Wilmers K & Wurst B 1990 Identification of gama-irradiated spices by Chemometric evaluation of GC/MS - profiles from Nutmeg. *Deutsche Lebensmittel - Rundschau* 86(11) : 344-348

Saffron

- Alonso G L *et al* 1990 Auto oxidation in saffron at 40 degrees C and 75 percent relative humidity. *Journal of Food Science* 55(2) : 595
- Cuvellier M E, Berset C & Richard H 1990 Use of a new test for determining comparative antioxidative activity of butylated hydroxyanisole, butylated hydroxytoluene, alpha-tocopherols and gamma-tocopherols and extracts from Rosemary and Sage. *Sciences des Aliments* 10 : 797-807
- Fakhrai F & Evans P K 1990 Morphogenic potential of cultural Floral explants of *Crocus sativus* L for the in vitro production of Saffron. *Journal of Experimental Botany* 41(22):47-53
- Isa T, Orgasawara T & Kaneko H 1990 Regeneration of Saffron protoplasts immobilized in Caaliginat beads. *Japanese Journal of Breeding* 40(2) : 153-157
- Kumar P 1990 The Saffron story. *Indian Spices* 27(1) : 5-12
- Plessner O, Ziv M & Negbi M 1990 In vitro corm production in the Saffron, *Crocus*. *Plant cell, Tissue and Organ Culture* 20(2) : 89-94
- Sarma K S *et al* 1990 In vitro production of stigma-like structures from stigma explants of *Crocus sativus* L. *Journal of Experimental Botany* 41(227): 745-748
- Viswanath S, Ravishankar G A & Venkataraman L V 1990 Induction of Crocin, Crocetin, Picrocrocin and Safranal synthesis in Callus cultures of Saffron - *Crocus sativus* L. *Biotechnology Applied Biochemistry* 12(3) : 336-341

Thyme

- Belhassen E *et al* 1990 Evolution of female frequencies in natural population of Thyme *Thymus vulgaris* L. Two alternative hypotheses accepted. *Comptes Rendus De L'Academie des Sciences Serie II Sciences de la vie* 310 : 371-377
- Balquez M A & Zafrapoplo M C 1990 A new chemotype of *Thymus vulgaris* ssp. *aestivus* (Reuter ex Willk) A. Bolos and O. Bolos. *Pharmazie* 45: 802-803
- Paster N *et al* 1990 Inhibitory effect of Oregano and Thyme essential oils on Moulds and Food borne bacteria. *Letters in Applied Microbiology* 11(1) : 33-38
- Salmeron J, Jordano R & Pozo R 1990 Antimycotic and Antiaflatoxigenic activity of oregano (*Origanum vulgare* L) and Thyme (*Thymus vulgaris* L). *Journal of Food Protection* 53 : 697-701
- Stahl-Biskup E & Laakso I 1990 Essential oil polymorphism in Finnish *Thymus* species. *Planta Medica* 56 : 464-468

Turmeric

- Balashanmugam P V & Vijayakumar K S 1990 Effect of Zinc and Iron on Turmeric yield. *South Indian Horticulture* 38(5) : 284-286
- Buescher R & Yang L Q 1990 Aluminium stabilizers of Turmeric in pickle brine against decomposition by light, heat and peroxidase. *Journal of Food Chemistry* 14(4) : 263-273
- Gajendran S *et al* 1990 Effect of different insecticides on germination of Turmeric. *Spice India* 3(9) : 6
- Jalgaonkar R, Jamadagni B M & Salvi M J 1990 Genetic variability and correlation studies in Turmeric. *Indian Cocoa Arecanut and Spices Journal* 14(1) : 20-23
- Jilani G & Saxena R C 1990 Repellent and feeding deterrent effects of Turmeric oil, Sweetflag oil, Neem oil and a Neem based insecticide against lesser grain borer. *Journal of Economic Entomology* 83(2) : 629-635
- Kumar H & Roy A N 1990 Occurrence of fungal rot of Turmeric (*Curcuma longa*) rhizomes in Delhi market. *Indian Journal of Agricultural Sciences* 60(3) : 189-192
- Maga J A & Kim C H 1990 Stability of natural colourants (*Annatto, Beet, Paprika, Turmeric*) during extrusion cooking. *Food Science and Technology* 25 : 427-433

- Maurya KR 1990 R.H 10 - A promising variety of Turmeric to boost farmers' economy. Indian Cocoa Arecanut and Spices Journal 13(3) : 100-102
- Mohideen M K, Khader *et al* 1990 Note on curing Turmeric rhizomes in cow dung slurry Vs. Sodium bicarbonate solution. South Indian Horticulture 38(1) : 1-7
- Ogutimein B O, Weyerstahl P & Weyerstahl M H 1990 Essential oil of *Curcuma longa* L leaves. Flavour and Fragrance Journal 5(2) : 89-90
- Ohshira M, Kuriyanagi M & Veno A 1990 Structures of sesquiterpenes from *Curcuma longa*. Phytochemistry 29: 2201-2205
- Pathania N K, Singh M & Arya P S 1990 Variation for volatile oil content in turmeric cultivars. Indian Cocoa Arecanut and Spices Journal 14(1) : 23-25
- Rao M A & Reddy L M 1990 Population and fertilizer requirement of Maize in Turmeric + maize intercropping system. Journal of Plantation Crops 18 : 44-49
- Rao S V & Reddy P S 1990 The rhizome fly *Calobata albimana* Macq a major pest of Turmeric. Indian Cocoa Arecanut and Spices Journal 14(2) : 67-70
- Reddy E N, Padmalatha B & Reddy K B 1990 Improvement of Turmeric - Present trend. Indian Cocoa Arecanut and Spices Journal 13(3) : 102-104
- Sampathu S R, Krishnamurthy N & Sowbhagya H B 1990 Processing Aspects of Turmeric. Spice India 3(4) ; 14-15
- Nandi A 1990 Evaluation of turmeric varieties for north-eastern plateau zone of Orissa under rainfed conditions. Indian Journal of Agricultural Science 60(11) : 760-762
- Vaisan A C *et al* 1990 Chemical analysis of some cultivars of *Curcuma longa* Linn. Journal of Food Science and Technology - Mysore 26(5):L 293-296
- Yadav K D & Kulkarni P R 1990 Turmeric - present scenario. Spice India 3(1) : 5-9

Vanilla

- Funk C & Brodelius Influence of growth regulators and an elicitor or phenylpropanoid metabolism in suspension cultures of *Vanilla planifolia*. Phytochemistry 29(3):845-849
- Funk C & Brodelius P 1990 Phenylpropanoid metabolism in suspension cultures of *Vanilla planifolia* Andr. Effects of precursor feeding and metabolic inhibitors. Conversion of 4-Methoxycinnamic acids into 4-Hydroxybenzoic acids. Plant Physiology 94(1) : 95-109
- Ranadive A S 1990 Vanilla - some additions and corrections. Food Technology 44(4) : 34-51
- Ruiz C C, Bayona A H & Sanchez F G 1990 Derivative spectrophotometric determination of vanillin and p-Hydroxybenzaldehyde in Vanilla bean extracts. Journal of Agricultural Food Chemistry 38(1) : 178-182

STATEMENT OF OWNERSHIP OF JOURNAL OF SPICES & AROMATIC CROPS (Form iv)

1. Place of publication : Calicut (Kozhikode)
2. Periodicity of publication : June & December
3. Printer's name, nationality and address : V C Menon, Indian Renaissance/Fototypesettings Railway Station Link Road Calicut 673 002
4. Publisher's name, nationality and address : P N Ravindran, Indian Secretary, ISS C/o. National Research Centre for Spices Calicut (India) 673 012
5. Editor's name, nationality and address : P N Ravindran Secretary, ISS C/o. National Research Centre for Spices Calicut (India) 673 012
6. Name and address of individuals who own the newspaper & partners holding more than one percent of capital : Indian Society for Spices (ISS) National Research Centre for Spices Calicut

I, P N Ravindran hereby declare that the particulars given above are true to the best of my knowledge and belief.

10th May 1992

Sd/-
P N RAVINDRAN
(Signature of the publisher)

Telephone: Office : 62796
Res. : 60641

Agro Plantation Agencies

Jail Road, Calicut - 673 002

Dealers in:

**PESTICIDES, FERTILIZERS
SPRAYERS, SPRAYER PARTS
AGRICULTURAL IMPLEMENTS
BIOGAS STOVES, LIGHTS, etc.**