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HERBS, AROMATIC AND MEDICINAL PLANTS EXPORT PRODUCTION/MARKETING WORKSHOP - LANKA OBEROI HOTEL - 6TH APRIL 1995

PART II

THIS WORKSHOP HANDOUT ITEM MAJORS ON THE SPICES/ESSENTIAL OILS EXPORT, QUALITY, STANDARDS, TRENDS ETC SECTORS; AND FURTHER HIGHLIGHTS THE CONSIDERABLE/ FREELY AVAILABLE INFORMATION RESOURCE HELD IN THE PROJECT'S BIC/BUSINESS INFORMATION CENTER

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AgEnt

HELPING SRI LANKA TO GROW!

AgEnt is a dynamic USAID funded private sector agro-enterprise development initiative successfully assisting companies and entrepreneurs with viable business/marketing plans to expand existing operations or start-up new ventures targeted at both domestic and export markets.

Document Objectives

Part 1 document (under this selfsame heading) describes the identical objectives behind this Part II workshop handout item, with the exception that the topics covered in the Appendices major on the spices/essential oils product sectors.

Again, a visit to the Project's BIC/Business Information Center and a discussion with Mrs. Gayatri Abeydeera (BIC Manager) should further assist you to uncover deeper information on your specific area of interest.

Overleaf, we have reproduced a recent advertisement which appeared in the Sri Lanka " Exporter " magazine which illustrates a number of important assistance sectors where AgEnt can make " shared investment grants " available to clients with an " approved, viable business/marketing plan ".

AgEnt

AgEnt IS A DYNAMIC USAID FUNDED PRIVATE SECTOR AGRO-ENTERPRISE DEVELOPMENT INITIATIVE SUCCESSFULLY ASSISTING COMPANIES AND ENTREPRENEURS WITH VIABLE BUSINESS/MARKETING PLANS TO EXPAND EXISTING OPERATIONS OR START-UP NEW VENTURES TARGETED AT BOTH DOMESTIC/EXPORT MARKETS!

Over the past 20 months AgEnt has assisted many Sri Lankan agro-enterprises and entrepreneurs through the project's unique "50% SHARED INVESTMENT GRANTS" program in the following export sectors -

1. To visit overseas markets to assess/acquire new higher added value processing and packaging technologies.
2. To conduct "first hand" export markets research to determine whether existing or new concepts/products have the potential to achieve success, linked to the development/implementation of export marketing strategies which are most likely to work in the highly competitive international market place.
3. To participate in trade fairs to help them promote their products and find new buyers.
4. To produce "on target" export promotional material such as product information/sales brochures.
5. To send samples to potential buyers for initial evaluation.
6. To develop new export manufacturing processes.

- and much, much more.

Next, AgEnt's freely accessible Business Information Center maintains an up-to-date collection of hard back publications, international trade magazines, product sector trend/price reports, linked to an international network capable of accessing a wide range of production, post harvest handling, processing, marketing and agri-business topics.

For more information on how AgEnt can possibly assist your agro-enterprise in the export marketing development arena, please send a brief one page letter outlining the nature of your business and possible assistance sought to-

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Managing Director - AgEnt Project,
5th Floor, Deutsche Bank, P.O. Box 389,
86 Galle Road, Colombo 3, Sri Lanka.
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We will then send to you our AgEnt information brochure and an agro-enterprise profile form which needs to be completed to form the basis for holding our first exploratory meeting with a potential client.

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IMPORTS (Tonnes)

			1990	1991	1992	1993	1994
0904111020	Pepper, Black not ground		32980	38860	40590	35969	
		Brazil	8778	15069	6601	4580	
		India	6579	2310	9890	21985	
		Indonesia	8444	11330	20768	7666	
		Malaysia	6768	8154	2073	209	
		Sri Lanka	644	396	310	539	
0904112040	Pepper, white not ground		5721	5174	5544	5481	
		Indonesia	5506	4938	5089	4304	
0904120000	Pepper ground		735	648	509	661	
0904202000	Paprika		4118	3887	3077	4125	
0904204000	Capsicum: Anaheim or Ancho		1502	1425	1166	1061	
0904206000	Other Capsicums, unground		11693	10678	15049	14801	
		Chile	776	824	1439	1409	
		China	3555	1808	1649	3127	
		India	2769	2277	5404	5972	
		Mexico	1891	2150	1617	2010	
		Pakistan	1639	2659	3670	141	
0904207000	Other Capsicums, ground		6760	5497	10691	7616	
0905000000	Vanilla		975	1308	1262	1332	
		Comoros	59	128	148	156	
		Indonesia	482	616	602	667	
		Madagascar	396	493	471	465	
		Mexico	2	13	6	7	
		Other Pacific Islands	26	56	32	32	
0906100000	Cinnamon & Cassia		10921	13896	15046	13492	
		China	230	521	591	721	
		Indonesia	9901	12548	13644	11927	
		Pakistan		75	49		
		Singapore	163	33	32	53	
		Sri Lanka	509	581	374	421	
		Taiwan	89	57	11	33	
0906200000	Cinnamon & Cassia, ground		715	431	529	931	
0907000000	Cloves		1851	1140	1156	1245	
		Comoros	68	80			
		France	31	23	10	20	
		Indonesia	111	135	71	78	
		Madagascar	347	664	888	961	
		Singapore	44	97	15	41	
		Sri Lanka	59	29	21	13	
		Tanzania	65	45	30	80	
0908100000	Nutmeg		1711	1858	1685	1846	
		Indonesia	1076	1285	1200	1149	
		Leeward & Windward Isles	61	29	56	106	
		Madagascar			2	10	
		Singapore	490	425	324	471	
0908204000	Mace		296	179	220	226	
		Indonesia	139	159	145	212	
		Singapore	117	16	18	9	
		Sri Lanka		1			
0908300000	Cardamoms		220	167	169	236	
		Guatemala	200	135	159	209	
		India	12	14	7	13	
		Korea, Rep		10			
0909100000	Anise Seeds		964	1110	1026	1339	
0909200000	Coriander Seeds		2161	2454	2314	2174	
0909300000	Cumin Seeds		4671	4015	6435	5231	
0910102000	Ginger, Fresh or Dried		5794	7446	8241	8101	
0910104000	Ginger, ground		1357	707	158	116	

ESSENTIAL OILS

UNITED STATES

IMPORTS (Tonnes)

HTS Code	Product		1990	1991	1992	1993	1994
3301.21-0000	Geranium Oil		62	50	53	64	0
		China	13	10	12	10	0
		Egypt	7	15	12	13	0
		France	27	20	23	34	0
		UK	3	2	2	1	0
3301.22-0000	Jasmine Oil		2	11	4	11	0
3301.23-0000	Lavender Oil		335	403	485	418	0
3301.26-0000	Vetiver Oil		85	41	30	48	0
		Brazil		2	1		0
		France	3	2	13	6	0
		Haiti	72	30		22	0
		Hong Kong				5	0
		India				1	0
		Indonesia	8	3	15	12	0
		Japan		3			0
3301.29-1000	Eucalyptus Oil		378	326	347	454	0
		Australia	1	3	16	4	0
		Bolivia	7	1			0
		Brazil	26	3	22	14	0
		Chile	5	2			0
		China	268	222	268	386	0
		France	9	1	2	7	0
		Jamaica		6	5	1	0
		Hong Kong	21	18			0
		Indonesia		4			0
		Paraguay		5			0
		Singapore	2	2			0
		South Africa	12	7	14	12	0
		Switzerland	0	15	7		0
		Taiwan		32			0
		UK	14	5	9	10	0
3301.29-5007	Cassia Oil		333	493	445	385	0
		Bahamas				2	0
		China	241	221	290	223	0
		Hong Kong	44	28	95	1	0
		India	0	150	0	1	0
		Indonesia	10	47	9	27	0
		Japan	37	44	45	74	0
		Sri Lanka	0	2	0		0
3301.29-5009	Cedar Oil		461	288	366	338	0
3301.29-5011	Citronella Oil		504	358	568	886	0
		China	368	299	448	648	0
		France	1	0	1	135	0
		Hong Kong	34			14	0
		Indonesia	39	7	35	24	0
		Paraguay				1	0
		Singapore			5		0
		Sri Lanka	52	40	37	29	0
		Taiwan	9	8	36	34	0
3301.29-5013	Clove Oil		366	475	336	463	0
		Brazil		0	2	1	0
		China			3		0
		France	30	33	16	16	0
		India	1	4		1	0
		Indonesia	230	254	143	196	0
		Madagascar	101	165	115	211	0
		Singapore	1	8	54	38	0
		Sri Lanka		3			0
		Tanzania		3	1	0	0
		UK	1	5	3		0
3301.29-5019	Lemongrass Oil		56	37	87	68	0
		Argentina				6	0
		China			3	7	0
		Guatemala	50	27	29	33	0
		Hong Kong			42	4	0
		India	6	10	5	7	0
		Indonesia			5		0
		Italy				4	0
		Netherlands			2		0
		UK				6	0

EUROPE

Spice Trading

IMPORTS (Tonnes)

			1990	1991	1992	1993
0904111020	Pepper, Black not ground					
		Brazil				
		India				
		Indonesia				
		Malaysia				
		Sri Lanka				
104112040	Pepper, white not ground					
		Indonesia				
0904120000	Pepper ground					
104.10-10	Dried Sweet Capsicums			9481		
		Morocco		7960		
		South Africa		164		
		Chile		164		
		China		217		
104.20-31	Capsicum, for oleoresin etc extraction			440	873	
0904.20-39	Capsicums, dried, unground not for extraction			2310	2379	
		Morocco		277	331	
		Malawi		252	250	
		Mexico		394	224	
		Jamaica		598	658	
		India		268	430	
104.20-90	Capsicums (or Pimenta), crushed or ground			20234	27879	
		Turkey		941	1078	
		Hungary		3112	4270	
		Morocco		4810	11378	
		South Africa		2966	1730	
		Brazil		1890	2527	
		Pakistan		1373	1529	
		China		1185	1267	
0905.00-00	Vanilla		422	430	529	532
		Comoros	73	105	103	124
		Indonesia	89	108	105	61
		Madagascar	213	169	228	259
		USA	20	18	61	
^108.10-00	Cinnamon, not crushed or ground		4184	4725	5182	
		Seychelles	9	53	322	204
		Madagascar	1209	1063	1028	1291
		China	394	357	542	697
		Indonesia	1544	2166	2068	2303
		Sri Lanka	714	658	766	759
108.20-00	Cinnamon, crushed or ground		390	665	689	473
		Madagascar	135	302	220	126
		Sri Lanka	43	49	91	80
		Vietnam	3	10	81	
		Indonesia	114	146	112	96
		China	41	37	106	76
0907.00-00	Cloves		1907	2605	2336	2243
		Tanzania	164	44	104	33
		Madagascar	684	946	1665	1767
		Comoros	594	1427	314	259
		Sri-Lanka	109	67	90	104
		Indonesia	124	33	68	26
108.10-90	Nutmeg		5607	7033	5457	5545
		Indonesia	3943	5474	4168	3661
		Grenada	768	1139	1094	1462
		Singapore	174	76	75	306
108.20-10	Mace		991	1348	1146	1141
		Indonesia	690	993	851	671
		Singapore	120	61	49	38
		Sri Lanka	1		22	
108.20-90	Mace, crushed or ground		64	30	36	
U908.30-00	Cardamoms		563	560	666	695
		Guatemala	440	414	495	518
		India	45	75	78	81
910.10-00	Ginger, Fresh or Dried		8471	10587	11788	10686
		Nigeria	1066	1361	2212	1675
		Costa Rica	1280	1464	816	852
		Brazil	2180	2395	2406	3516
		Thailand	247	596	2355	880
		Indonesia	562	1271	415	812
		China	1212	1415	1176	1273

Source: EUROSTAT

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IMPORTS (Tonnes)

			1990	1991	1992	1993
3301.21-10	Geranium		114	95	115	
		Egypt	19	19	28	
		Reunion	12	8	10	
		USA	21	5	11	
		China	47	44	59	
3301.26-10	Vetiver		95	78	105	
		Haiti	37	27	60	
		Indonesia	36	30	25	
3301.29-11	Clove, Niaouli and YlangYlang		1055	956	980	
		Tanzania	37	64	5	
		Madagascar	732	664	750	
		Comoros	79	56	53	
		Indonesia	161	115	104	
3301.29-51	Citronella		810	604	643	
		USA	24	15	18	
		Sri Lanka	58	40	30	
		Viet Nam	20	100	58	
		Indonesia	136	200	96	
		China	543	198	357	
3301.29-53	Eucalyptus		2170	2045	2344	
		South Africa	164	127	176	
		Brazil	31	23	34	
		India	57	5		
		China	1790	1784	2070	
		Australia	10	12	7	

EUIMPEO.WK4 Source: EUROSTAT 10/03/95

SINGAPORE SPICES

Confused situation as exports often far exceed imports.

Pepper

Pepper is usually imported as black not ground but imports of white have been increasing. Imports are dominated by supplies from "occidental Asia" and Malaysia. Most of the supplies are exported to a large variety of destinations. The major importers are Egypt, Europe, Korea, Pakistan and Turkey.

Chillies

Mostly imported as dried not ground. A significant proportion apparently remains in Singapore (over 6000 tonnes per year). China dominates the supply. Malaysia is the most important destination.

Vanilla

Once supplied by Madagascar, now imported from a number of origins including New Zealand and USA. Annual exports have exceeded imports, but cummulatively over five years alomost balance. Mostly the product is exported to Europe where the principal destinations are France and Germany.

Cinnamon

China dominates supplies. Exports exceed imports. Bangladesh and India are most important among a large number of destinations.

Cloves

Over 12000 tonnes imported per year, mostly from Madagascar and Tanzania. Exports have been exceeding imports. Large number of destinations, Bangladesh, India and Saudi Arabia are particularly important.

Nutmeg

Exports far exceed imports. Product is probably being transhipped from Indonesia and only appearing in the export figures. Recorded imports are below 100 tonnes per year. Exports mainly go to Europe, USA and Japan.

Mace

Similarly exports exceed imports. Principal destination are Europe and India and Pakistan.

Cardamoms

Imports and exports are more or less in balance, with 1000 to 2000 tonnes imported per year. Guatemala dominates the supply. Bangladesh and Pakistan are the major destinations. Supplies to Nepal, once important, have declined. Myanmar has emerged as increasingly important.

Ginger

Imports have increased from 2500 tonnes in 1990 to over 3500 tonnes in 1994. Exports exceed imports. Malaysia and China are the most important suppliers. Pakistan is by far the most important destination for exports.

SINGAPORE ESSENTIAL OILS

Trade statistics do not disaggregate the oils into individual types. Around 2.5 million litres are imported per year, and about 1.25 million litres are exported. China is now the principal supplier while India has declined in importance as an origin and grown as a destination. Other important destinations include Malaysia, Thailand and the USA. Retention of half of the imports indicates the scale of onward processing of the oils into their derivatives.

ESSENTIAL OILS SINGAPORE

IMPORTS ('000 Litres)

Origin	1990	1991	1992	1993	Jan-Nov 1994
Australia	11	12	17	31	29
Belgium	2	0	0	4	0
Brazil	85	152	278	73	97
China	822	654	589	1187	1091
Egypt	0	0	0	1	0
France	17	35	52	70	64
Germany	201	204	174	157	127
Hong Kong	87	143	82	79	42
India	48	1016	578	254	155
Israel	3	0	0	0	0
Italy	1	2	1	14	1
Japan	14	21	14	16	113
Kampuchea	0	0	0	0	0
Korea, Dem	50	0	10	86	81
Korea, Rep	16	0	0	2	0
Madagascar	0	11	18	248	70
Malaysia	10	2	12	8	60
Netherlands	12	8	3	16	5
Occidental Africa	0	0	0	1	1
Occidental Asia	36	90	95	0	0
Saudi Arabia	1	0	0	0	0
Spain	50	32	25	35	19
Sri Lanka	11	9	2	5	2
Switzerland	5	3	5	6	7
Taiwan	3	5	0	0	0
Thailand	10	16	38	18	24
United Kingdom	102	68	142	183	154
United states	24	37	93	230	129
USSR	24	0	0	0	0
Vietnam	0	0	0	139	57
Others	3	3	48	1	3
Total	1649	2523	2276	2863	2333

ESSENTIAL OILS

SINGAPORE

EXPORTS ('000 Litres)

Destination	1990	1991	1992	1993	Jan-Nov 1994
Brazil	0	0	43	202	79
China, Peo Rep	0	0	515	1	0
France	49	88	82	83	47
Germany	26	73	36	30	39
Hong Kong	91	148	38	1	70
India	154	121	135	198	237
Italy	4	5	37	101	30
Japan	45	16	2	13	5
Korea, Rep	21	43	12	15	14
Malaysia	50	88	79	76	256
Netherlands	42	17	3	21	12
Paraguay	0	34	80	78	18
Philippines	19	34	72	102	22
Spain	7	13	45	58	29
Sri Lanka	11	18	9	0	2
Taiwan	10	26	8	18	24
Thailand	131	177	205	123	92
United Arab Emirates	0	3	0	2	27
United Kingdom	6	26	42	67	42
United States	32	56	92	102	135
Others	48	41	19	77	69
Total	748	1027	1555	1368	1252

NET IMPORTS ('000 Litres)

	1990	1991	1992	1993	Jan-Nov 1994
Total	901	1495	722	1495	1082

HIANGKIE SPICE PLANT

Hiang Kie Pte Ltd has been a coffee and spice trader in Singapore since 1936. Apart from the trading activities, Hiang Kie has coffee-roasting facilities. It is now setting up a complete high capacity spice processing plant in addition to its existing decaffeinating plant in its Senoko premises in Singapore.

The spice plant which is now under construction will be operational by April 1995. It is capable of cleaning, steam-sterilisation and fine-grinding of all kinds of spices.

Cleaning: In order to remove foreign matters in the raw material, the product passes through a series of Swiss made equipments.

Sterilising: The latest and very advanced steam-sterilizing equipment is being deployed for this purpose. In an enclosed vessel, superheated steam is applied on the clean raw material for a short period of time. This is to ensure minimum losses of flavour, colour and aroma. Our system can handle a wide range of spices, both powder and granular. It is also capable of immediate cooling and drying which reduce the risk of re-contamination. Another feature is the ability to pack the finished product in various bag sizes to meet customers requirements.

Grinding: Our contra plex wide chamber mill, coupled with cryogenic feed can grind any kind of spices with minimum losses in aroma, essential oil and colour.

Hiang Kie is able and prepared to offer cleaned and/or processed and/or sterilized products. It also prepared to do customer's own raw material on tolling basis at reasonable and competitive prices..

25 Nov 94

SPICE

SPICE TRADERS AND MANUFACTURERS

IN

SINGAPORE

Published by the Singapore Trade Development Board
1994

JAPAN

In comparison to the other large importers in the Far East Japan exports insignificant quantities of spices and oils. It is therefore of interest as a terminal market for these products rather than an intermediary.

SPICES

Pepper

Mostly imported dried but not crushed or ground. Imports fairly steady at around 6000 tonnes per year. Malaysia dominates the supply with around 60% of imports, while Indonesia holds a further 20% of the market.

Chilli

An increasing market in dried product, now amounting to over 10000 tonnes. Imports of crushed or ground product are only slightly below whole dry fruits. China dominates supplies, but there are significant imports of crushed or ground product from Spain, Hungary, Chile and Brazil, presumably supplying paprika.

Vanilla

Imports have expanded over the last four years from 55 tonnes to nearly 80 tonnes. Madagsacar dominates the supply.

Cinnamon

Imports have remained steady at around 1800 to 1900 tonnes over the last four years but more crushed or ground product is now being imported. China is the major supplier.

Cloves

Tanzania and Madagascar dominate this small import market. Product is also imported from Sri Lanka.

Nutmeg

Around 400 tonnes imported annually, mostly derived from Indonesia.

Mace

A minor import market taking no more than 65 tonnes per year, almost exclusively from Indonesia.

Cardamoms

Statistics show imports of 200 to 250 tonnes per year, with a decline in the import of crushed or ground product. Around 70% of imports derive from India.

Ginger

Traditionally imported in a brined form, there as been rapid growth in the import of ginger not in provisionally preserved. Imports of this product have risen from 4400 tonnes in 1990 to approaching 30000 tonnes in 1994. Indonesia and Thailand have been important suppliers, but in 1994 product from China acoounted for 80% of imports. In 1990, 1991 and 1992 around 40000 tonnes of the brined form were

imported, principally from Thailand but also from China and Indonesia, but 1994 imports were significantly lower (18300 tonnes for the 11 months to november 1994).

JAPAN ESSENTIAL OILS

Total imports of essential oils have expanded from 10,000 tonnes in 1990 to 16,000 tonnes in 1994. A number of products have declined, but Orange Oil and peppermint oils(M. arvensis) have shown exceptional growth.

Geranium Oil

France supplies 70-80% of the imports of geranium oil. Total annual imports are in the range 11-18 tonnes.

Vetiver Oil

Declining imports from alomost 9 tonnes in 1990 to under 6 tonnes in 1994. Indonesia supplies up to 50% of the requirement with the balance being sourced from China, France and Haiti.

Clove Oil

Imports in sharp decline from over 100 tonnes in 1990 to about 50 tonnes in 1994. Indonesia has dominated the supply (75% in in 1992) but has now been overtaken by the USA. Madagascar, which held 30% of the market in 1990, no longer supplies the Japanese market.

Other Essential Oils

This category includes a wide range of oils. Imports have declined since 1990 from 262 tonnes to around 160 tonnes. China has about 30% of the market. Of the balance Vietnam, France, Spain and the USA are the most important origins.

ESSENTIAL OILS JAPAN

IMPORTS (Tonnes)

Customs Code	Item		1990	1991	1992	1993	Jan-Nov 1994
3301.11-000	Bergamot Oil		22	18	25	16	25
3301.12-000	Orange Oil		5937	8955	10719	11377	13049
3301.13-000	Lemon Oil		392	354	338	374	344
3301.14-000	Lime Oil		61	54	54	56	64
3301.19-000	Essential Oils of Citrus, nes		357	367	190	434	340
3301.21-000	Geranium Oil		12	18	11	9	13
		China	1	1	2	3	3
		Taiwan	1			0	
		France	9	15	8	5	10
3301.22-000	Jasmin Oil		1	1	0	8	0
3301.23-000	Lavender Oil		44	46	43	4	40
3301.24-000	Peppermint Oil (Mentha piperita)		277	300	261	267	237
3301.25-011	Mint Oil (M. arvensis >65%)		345	712	511	324	586
3301.25-019	Mint Oil (M. arvensis nes)		89	174	124	133	175
3301.25-020	Peppermint Oils, nes		16	0	9	9	14
3301.25-030	Other Mints		97	133	87	84	80
3301.26-000	Vetiver Oil		9	7	7	8	6
		China	1	1	1	1	1
		Indonesia	4	5	2	5	4
		France	2	1	2	1	1
		Haiti	1	1	1	1	
3301.29-110	Cassia Oil		80	75	78	67	68
3301.29-120	Cedar Oil		191	157	195	140	174
3301.29-130	Clove Oil		103	73	79	56	47
		Indonesia	61	44	61	37	18
		France	2	2	2	2	1
		USA	9	10	16	17	27
		Madagascar	31	18			
3301.29-140	Sandal wood Oil		3	4	3	3	3
3301.29-190	Other Essential Oils*		263	179	220	237	160
		China	99	42	50	64	56
		Taiwan	8	10	14	21	5
		Vietnam	18	22	15	6	
		Indonesia	39	15	43	72	19
		France	16	20	17	15	15
		Spain	27	35	37	28	37
		USA	29	16	19	13	7
		Guatemala	16	7	10	6	9
		Paraguay	2	4	6	5	4
		Comoros	1	1	0	1	0
		Australia	2	4	5	2	4
3301.29-210	Patchouli Oil		38	30	29	26	39
3301.29-220	Ho Oil		4	5	2	2	1
3301.29-231	Rose Oil		1	0	0	0	1
3301.29-239	Essential Oils, nes		741	630	954	661	513

* Bay leaf, cananga,citronella,eucalyptus, fennel,staranise, petit-grain, rosemary, rose wood, ylang ylang, cinnamon, ginger grass, palmarosa, thyme, gyusho, lemongrass oils

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No.28
February, 1986

ACCESS TO JAPAN'S IMPORT MARKET

SPICE
(2nd edition)

19

HONG KONG SPICES

Hong Kong is a limited consumer of spices and oils. The scale of trade, both in imports and in exports, belies the size of the local market. The trade revolves around the entrepot function of the Colony which acts as a conduit for goods in and out of China.

Pepper and chillies

Aggregated in statistics until 1992, now partially separated. Bulk of the imports are Chillies from China. Over 90% is usually re-exported to a variety of destinations: Singapore, Thailand, Malaysia and the USA all take significant quantities. Opportunities for substituting existing supplies of these products are probably limited.

Vanilla

The principal supplier over the last three years has been Switzerland with less significant quanitites derived more directly from Indonesia. Practically all the product is re-exported, in fact, according to the statistics, rather more leaves Hong Kong than is recorded as entering. Japan and China are consistant destinations, although significant quantities have also been shipped to Canada and Vietnam.

Cinnamon

Mostly derived from China and traded onwards. The most important destination for re-exports are the United Arab Emirates (1000 - 1500 tonnes per year) and Singapore (up to 5000 tonnes). Perhaps consider UAE market.

Cloves

Singapore is the principal supplier, mostly for re-export to China.

Cardamoms, Nutmeg and Mace

Most of the supplies are derived from Indonesia for onward export to China. A declining trade.

Ginger

The trade statistics refer to ginger, not preserved in sugar or conserved in syrup, but do not separate out trade in dried as opposed to brined product. Trade is increasing with imports over 10000 tonnes per year. A significant quantity remains in Hong Kong (9000 tonnes in 1992), but re-exports are increasing, particularly to Japan. The United Arab Emirates are a smaller but significant destination.

HONG KONG ESSENTIAL OILS

Not separated out into individual oils. Around 5000 tonnes imported annually. China dominates supplies. Most of the oils are re-exported. The major destination of the non-citrus oils are the USA, Europe, the Philippines and Indonesia.

CARDAMOM

Market prospects

The Middle East market offers the best prospects for Andean exporters of cardamom. The Saudi market will continue to be the major world market for cardamom for the foreseeable future, although price is going to become an increasingly important demand determinant. The market will probably be the last to lower its standards and therefore there will continue to be an insistence on certain product qualities. It will not become a market for sun-dried brown cardamom. Such a product will have to find other outlets in the Gulf area, notably in the market for a cheap ground powder. Dubai and Bahrain are the best targets for such trade.

Market prospects for cardamom through Dubai are excellent albeit highly competitive and price sensitive. The port is emerging as the major point of entry into Gulf countries, apart from Saudi Arabia. It provides an excellent opportunity for Andean countries to enter the market. Competition will intensify as more sources from the east enter the market.

Dubai is probably the only market which can place "yellow" cardamom.

Based on interviews with several of the top United States and European cardamom brokers, demand is not expected to increase significantly in the future. Guatemala is expected to continue to supply the majority of market requirements with its high quality cardamom at reasonable prices. Even though other Central American countries have increased production, notably Honduras and Costa Rica, and shipments have been made by these countries over the past three years, none has as yet managed to erode Guatemala's dominant market position.

Recommendations for follow-up

Andean exporters should make direct contact with the traders, sending samples and providing price quotations. Sample sizes should be half to one kilogram in weight and the most important requirements are that the cardamom must be clean and free of foreign matter, e.g. mammalian excreta, insects, mould etc.

Spice traders need to be persuaded that exporters can guarantee regular supplies which are of a consistent quality before they agree to switch sources. However, the cardamom trade is extremely price sensitive and opportunities do exist for exporters which can offer a competitively priced product.

A. Introduction

Cardamom consists of the dried aromatic fruits and seeds of a herbaceous perennial plant, *Elettaria cardamomum*, a member of the Zingiberaceae family. The plant is

A code of good manufacturing practice for the Seasoning Manufacturers' Association

SMA

M

ASTA CLEANLINESS SPECIFICATIONS FOR UNPROCESSED SPICES, SEEDS, AND HERBS

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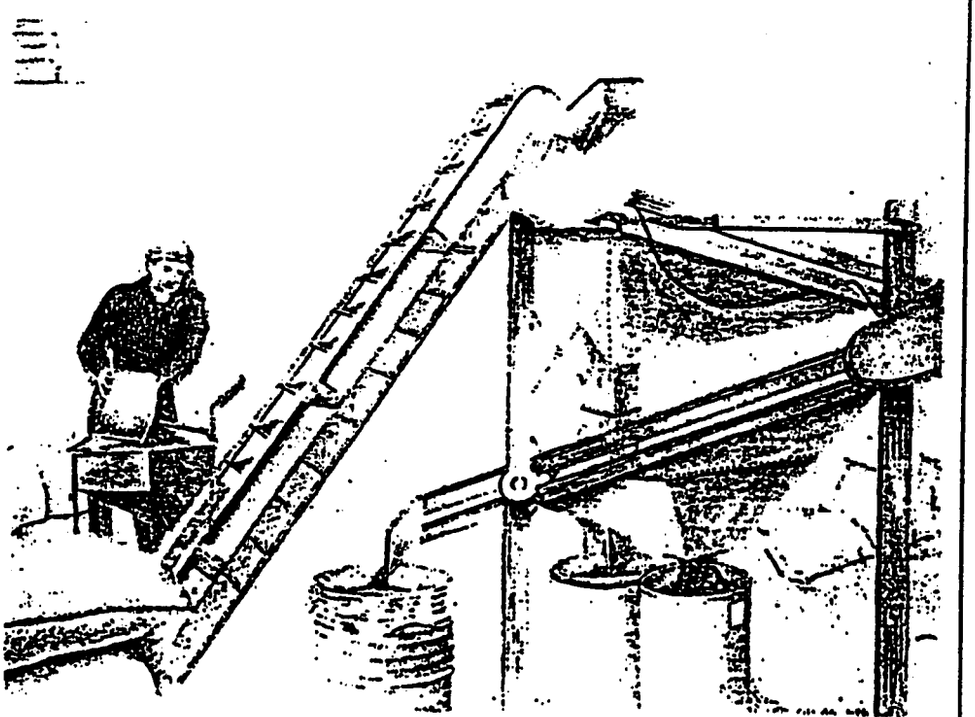
Cleaning & Reconditioning of Spices, Seeds & Herbs



AMERICAN SPICE TRADE ASSOCIATION
580 SYLVAN AVENUE
ENGLEWOOD CLIFFS, N.J. 07632

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STATUTORY INSTRUMENTS

1994 No. 1985

AGRICULTURE

PESTICIDES

The Pesticides (Maximum Residue Levels in Crops, Food and Feeding Stuffs) Regulations 1994

Made - - - - 25th July 1994

Coming into force in accordance with regulation 1

LONDON : HMSO

Reprinted 1994

£6.75 net

25

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Official Journal
of the European Communities

ISSN 0378-6978

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Volume 36

23 August 1993

English edition

Legislation

Contents

I *Acts whose publication is obligatory*

.....

II *Acts whose publication is not obligatory*

Council

★ **Council Directive 93/57/EEC of 29 June 1993 amending the Annexes to Directives 86/362/EEC and 86/363/EEC on the fixing of maximum levels for pesticide residues in and on cereals and foodstuffs of animal origin respectively** 1

★ **Council Directive 93/58/EEC of 29 June 1993 amending Annex II to Directive 76/895/EEC relating to the fixing of maximum levels for pesticide residues in and on fruit and vegetables and the Annex to Directive 90/642/EEC relating to the fixing of maximum levels for pesticide residues in and on certain products of plant origin, including fruit and vegetables, and providing for the establishment of a first list of maximum levels** 6

Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.

The titles of all other Acts are printed in bold type and preceded by an asterisk.

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INTERNATIONAL STANDARD ISO 3217

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Oil of lemongrass (*Cymbopogon citratus*)

Huile essentielle de lemongrass (Cymbopogon citratus)

First edition — 1974-08-15

UDC 668.524.004.1

Ref. No. ISO 3217-1974 (E)

Descriptors : essential oils, lemongrass, specifications, materials specifications

FMA

LEMONGRASS OIL, INDIAN

CAS #08007-02-1

1.1 DESCRIPTION

1.1.1 Botanical Nomenclature
Cymbopogan citratus and to a smaller extent
Cymbopogan flexuosus oil
Family: Poaceae

1.1.2 Other Chemical or Common Names
Cochin Lemongrass oil

1.1.3 Appearance and Odor:
Pale yellow to yellow orange mobile liquid having a pronounced lemon-like odor.

1.1.4 Similar Varieties Other than Monograph Product
Lemongrass oil, West Indian (Guatemalan)
Lemongrass oil, Chinese

1.2 PRODUCTION

1.2.1 Methods of Production:
Steam distillation of the fresh or partially dried grass.

1.2.2 Growing Regions:
India

1.2.3 Harvesting:
Grass is harvested between April and August

1.2.4 Propagation:
Seeds or root division

1.3 PHYSICAL CHARACTERISTICS

1.3.1 Flash Point (Closed Cup): 160°F; (71°C)

DATE REVISED: 6/1/91
FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES © 1991

REPLACES E.O.A. #

1.4 STORAGE AND HANDLING

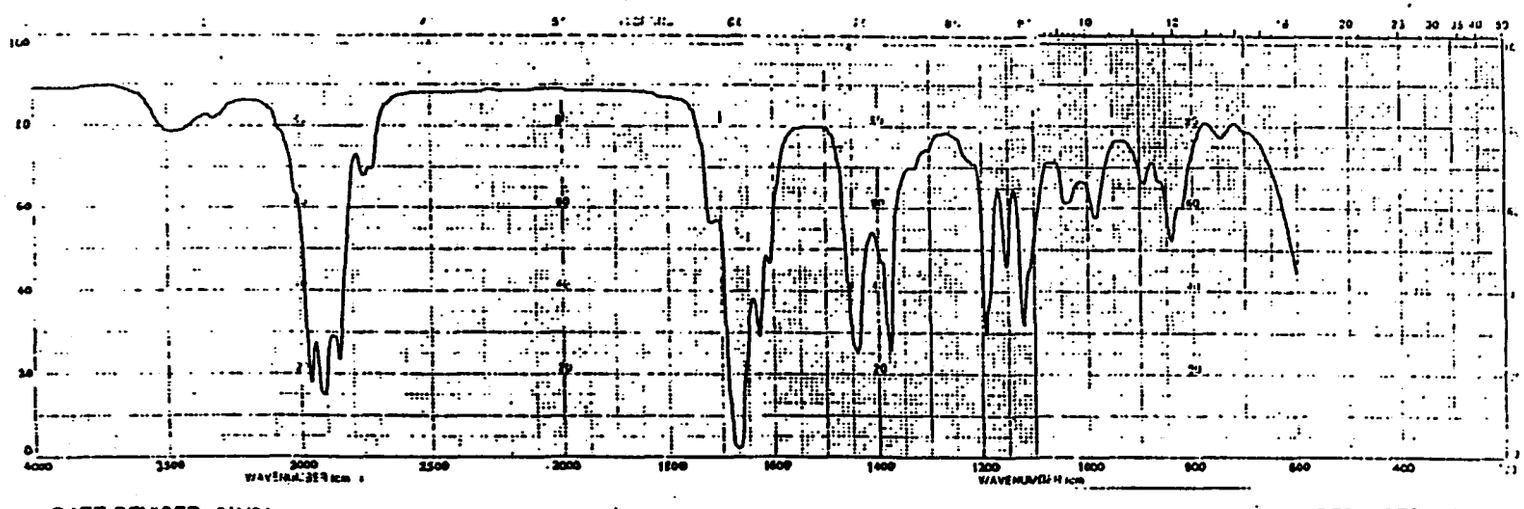
The material should be packaged in suitable glass, aluminum, plastic, stainless steel or appropriately lined containers. Unlined galvanized steel containers are permitted only when it is known that such a container will not have a deleterious effect on the odor and color of the product.

Closures should follow the same guidelines as listed above for the containers. Wherever practical, a container should be filled to between 90% to 95% of its capacity in order to maintain a minimal headspace above the liquid and still allow for expansion.

The product should be stored in a cool location (around room temperature), unless indicated below under Section 1.5.

1.5 SPECIAL CONSIDERATIONS

1.6 INFRA RED SPECTRUM



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CITRONELLA OIL, CEYLON TYPE

CAS #08000-29-1

1.1 DESCRIPTION

1.1.1 Botanical Nomenclature
Cymbopogon nardus (L.) Rendle
Family: Gramineae

1.1.2 Other Chemical or Common Names
CAS Name: Oils, citronella

1.1.3 Appearance and Odor:
A pale yellow to olive brown mobile liquid having a fresh grass-like odor.

1.1.4 Similar Varieties Other than Monograph Product
Citronella oil, Java type

1.2 PRODUCTION

1.2.1 Methods of Production:
Steam distillation of the dried grass.

1.2.2 Growing Regions:
Sri Lanka (Ceylon)

1.2.3 Harvesting:
The grass is harvested year round by hand cutting when dry.

1.2.4 Propagation:
Root division

1.3 PHYSICAL CHARACTERISTICS

1.3.1 Flash Point (Closed Cup): 175°F; (79°C)

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FLAVOUR AND FRAGRANCE JOURNAL, VOL. 4, 125–128 (1989)

The Effect of Cultivation Conditions on the Composition of Basil Oil*

Irma Nykänen

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The composition of the essential oil of basil grown under various conditions in Finland was analysed by capillary gas chromatography and mass spectrometry. The growth district seemed to affect the composition of the basil oil, the four districts studied yielding two chemotypes. The essential oil of one chemotype was high in linalol and estragole, whereas the oil of the other was high in linalol and eugenol. Cultivation under cover increased the yield of essential oil (mg/kg of herb) by about 80%. Depending on the chemotype, this increase was largely reflected in an increased production of estragole or eugenol, whereas production of linalol was less affected. Increasing nitrogen fertilizer supply over the range 0 to 160 kg N/ha first decreased and then increased the essential oil production (mg/kg of herb).

KEY WORDS Basil Chemotype Essential oil Fertilizer Gas chromatography Mass spectrometry *Ocimum basilicum* L.

INTRODUCTION

Basil (*Ocimum basilicum* L.) is native to Asia and other tropical regions. In Europe it is cultivated as a culinary herb.[1] Basil is known to occur as several chemotypes which differ in the composition of their essential oil.[1–10] Basil oil with high concentrations of linalol and estragole (called the European chemotype) is considered to have the finest flavour.[2,4,10] The Réunion chemotype of basil with essential oil rich in estragole is also frequently used by the food industry. Other chemotypes have oils rich in linalol and eugenol,[2,8,9,11] eugenol alone,[2,3,5,6] or methyl cinnamate.[1–6,10]

The aim of this study was to find out how the composition of the essential oil of basil is affected by the cultivation conditions. The factors studied were growth district, cultivation under cover versus open field, and nitrogen fertilizer supply.

EXPERIMENTAL

Eighteen samples of basil cultivated in four Finnish districts (Helsinki 60° 15′ N, Sahalahti 61°29′ N, Puumala 61°40′ N and Kaamanen 69°04′ N) were studied. The plants were provided by the Finnish Academy and the Medicinal and Spice Plant Experimental Farm, University of Helsinki.

The essential oil was isolated from fresh herb by steam distillation followed by extraction of the distillate with *n*-hexane and concentration by distillation as described earlier.[12] For the quantitative analysis *n*-butyl acetate was added to the extracts as an internal standard. A common response factor, 0.67, was used for all compounds.

The high resolution gas chromatographic (HRGC) analyses were run on a Hewlett-Packard 5880A using OV-101 fused silica capillary columns. The gas chromatographic – mass spectrometric (GC–MS) analyses were run on a Finnigan MAT 212 MS coupled with Varian 3700 GC. The same capillary column was used for HRGC and GC–MS analyses. The mass spectra were recorded at an electron energy of 70 eV.

RESULTS AND DISCUSSION

Identification of the Compounds

Table 1 lists the compounds identified in the essential oils of basil investigated in this study.

*Poster presented at 17th Workshop on Essential Oils, Bad Bevensen, FRG, September 1986.

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EUROPEAN SCIENTIFIC COOPERATIVE
ON PHYTOTHERAPY
Uhlenwardenstraat 13, NL-8081 HJ Elburg, The Netherlands

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European Phytotelegram
Official Newsletter of ESCOP

With an extended report on the 3rd International Symposium
"RESEARCH AND THERAPY WITH PHYTOMEDICINES"
The third symposium in the course of 'European Harmony in Phytotherapy'

Sixth issue - August 1994

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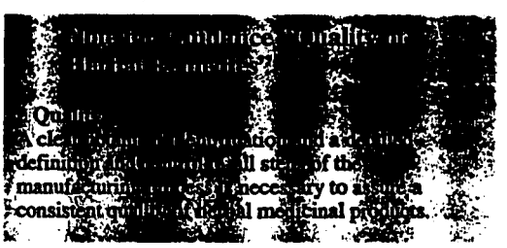
Phytotherapy at a European Level

Dr. K.Keller, Bundesgesundheitsamt, Berlin, Germany

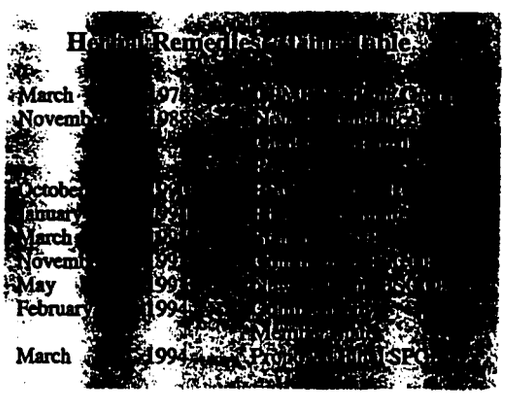
Introduction

The present discussion on herbal remedies has a long history within the EEC Commission and the Committee for Proprietary Medicinal Products (CPMP). Already in March 1978 a working group for "medicinal products of plant origin" was established. The result of a 10 years discussion was the note for guidance "quality of herbal remedies" of November 1988.



A consensus on medical questions was far from being reached at that time. During the inaugural ESCOP Symposium in Brussels in October 1990, ESCOP presented a first series of draft monographs on herbal remedies. This activity put new life to the question and greatly promoted a constructive discussion. As a result, the Pharmaceutics Committee of the EEC discussed the evaluation of herbal drugs again in January 1991 and resolved to prepare proposals for the evaluation of this group of medicinal products. The CPMP followed up this proposal at its meeting in March 1991 and asked us to be the rapporteur and summarise the status of herbal remedies evaluation in the individual Member States. In September 1992 we could present the results of intense discussions among the Member States to the CPMP, and in November 1992 ESCOP received a comment on the first set of monographs. The completely revised proposals, presented by ESCOP in May 1993, had been commented by Member States until February 1994. The proposed final Core-SPCs were on the agenda of the last CPMP-meeting in March 16, 1994. Because it was not possible to find an uniform opinion in this meeting, it was decided to continue discussions in May 1994. At present we are very close to an harmonised opinion on the SPCs on herbal laxatives. The SPCs on Matricariae flos and Valerianae radix pose more problems to some Member States.

Let me now present the main issues of the last years' discussions on herbal remedies:



Legal status of herbal remedies

When we started our report it was neither clear if herbal remedies were used in all Member States, nor what their legal status was in the different Member States. Nor did we know if they were a relevant issue for the European Community, be it for their number or for their economic or therapeutic status. Evidently, a non harmonised legal status of herbal remedies would be a major obstacle to the free circulation of products.

Today it is accepted that herbal remedies are medicinal products as defined in Article 1 of CD 65/65 EEC. This was confirmed by the CPMP in 1992. Divergent legislations in some Member States have been changed meanwhile and other European countries such as Sweden, Finland and Austria share this position. Two recent decisions of the European Court of Justice support this interpretation.(1, 2)

In one decision (1) the Court found that:

"[...] a product *recommended or described as having prophylactic or therapeutic properties is a medicinal*

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WORLD SPICE

INDIA 1995

CONGRESS

FEBRUARY 15-18, 1995
COCHIN

BUSINESS SESSION

SYNOPSES OF PAPERS

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The Public Ledger
COMMODITY WEEK
Saturday February 25, 1995

ESSENTIAL OILS

In a Commodity Week special report Mark Saville looks at the state of the essential oils business, one of the most buoyant of the minor commodities sectors.

OBSCURE may be a word that springs to mind when the talk turns to essential oils. Vetivert, patchouli, litsea cubeba, cananga - names which are prone to inspire vacant looks, a protracted silence, and frantic head-scratching when repeated to anyone outside the trade. But playing with words underestimates the scope and influence of the business.

Its annual value has been estimated at around $1bn, and essential oils are crucial ingredients in an immensely wide range of products. Many drinks wouldn't taste the same, pharmaceuticals would be denied some of their qualities, and perfumes would lose the allure which prompts millions of consumers to pay through the nose to tickle another nose. Obscure they may be, but essential oils are the ingredients which give thousands of products their distinctive qualities and selling point in the market place.

And there is every chance that the market will grow in the next few years. As the number of consumer products grows ever larger, manufacturers are desperate to assert the distinctive nature of theirs. A dash of a rare oil can separate a product from several which are similar; it can make it unique rather than bland.

Also, the growing interest in 'natural' health and cosmetic products in the western world is providing more opportunities. Witness the growth in aromatherapy, which has seen consumers paying for lemongrass oil to wake them up and lavender oil to put them to sleep. The possibilities are almost without bounds.

The aromatherapy market goes beyond the sale of small bottles of the oils to take in scented fibres and candles. Traders describe this as a major growth area over the last couple of years, but warn that aromatherapy is fraught with danger at the moment, as many people who don't know that they are doing become involved in the business. An example has been a recent effort to use lemon oil in bathing lotions, with the perpetrators ignorant of its capacity to become carcinogenic in some applications.

Such embarrassments are always likely to occur in a booming business which is pulling in those in search of a quick buck, pound or franc, and they provide a case for sticking with the major players, such as the big toiletry companies, who have a more thorough knowledge of their raw materials.

The market differs from other outlets in that most buyers want the oils in a natural state, even with the sediment, or at the most cleaned. In other sectors the buyers want a more highly-refined product, often distilled and decolourised, which is ready for their uses. Few toiletry or pharmaceutical companies want the trouble of carrying out these processes themselves.

Another sector providing new opportunities is in the food industry, where there are some traditional uses and growing interest in Asian and African cooking is increasing the demand for spice oils. Some may be sold directly to consumers and restaurateurs in specialist shops, but the big prize lays in the hands of the ready meals companies, who can swing a market in the space of weeks if they develop a popular new recipe.

Similarly, the increasing diversity in the soft drinks business, and the marketing departments' growing emphasis on natural ingredients and health, is opening new doors for essential oils traders. This is particularly so for those dealing in citrus oils, which provide a taste to compliment the sun-drenched image which the industry loves to bestow on its drinks.

A long established market is the perfume industry, which provided the initial openings for many older trading companies, and is especially important in France. Confectionery, pharmaceuticals and the tobacco industry, which sometimes uses oils to add a non-nicotene fragrance to cigarettes, are also important outlets for suppliers.

It is a vibrant time for the business. This brings pitfalls and disappointments, as a lot of the trade can take place on whims and hunches which makes some apparent successes into passing fads; and users are often reluctant to accept a significant price rise, deciding instead to change their formulas to take in less expensive raw materials.

However, the overall outlook for the business is relatively buoyant. In the past few years natural ingredients have won back a big share of the ground they lost to synthetics in the 1960s and 1970s, and the essential oils business has been among the winners.

As the momentum towards greater diversity and more natural products continues, the warm glow of success is likely to remain for several years to come.

More on pages V, VI and VII

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A pick of the essential bunch

OVER 200 essential oils are produced around the world, showing a great diversity in their origins and uses. They can be defined as volatile plants derived from leaves, flowers, fruits, stems, roots or tree bark, and suppliers are quick to point out that they are indeed *essential* for the cosmetic and food industries.

The oils are a volatile mixture of organic compounds, often found in natural form but sometimes derived in an enzymatic reaction when plant tissues are crushed or macerated. Most are highly sensitive, so that direct contact with sunlight, moisture, metals, acids and alkalis can radically change their composition.

Three production methods are used, of which the most common is distillation. This is usually done through passing steam over cut and chopped material, rupturing the cells and releasing the volatile elements, although boiling in water and placing over boiling water are also used.

Expression, effectively squeezing out the oil, and extraction are the alternative methods for some oils.

In such a large and complex market it would be an immense job to provide a detailed breakdown of each essential oil, but the following is a snapshot view of those listed in the price pages of *The Public Ledger:*

Aniseed: Can be distinguished from anise oil by its finer and more delicate flavour. Used in food flavouring, pharmaceuticals, and dental products. The main supplier is China.

Bay: Made by distilling the leaves of the bay rum tree, found in semi-cultivated areas of the West Indies and USA. It has a spicy odour which is popular in perfumes and toilet waters, and can be used as an ingredient in food sauces.

Camphor: Traditionally one of the most important of essential oils, it comes from the wood of the camphor tree in eastern Asia, with China the main supplier. It has long been used for incense, but more modern processes have taken it for synthetic perfumes, solvents, insecticides, medicines, soaps and lubricants.

Cassia: Extracted from hillside trees, largely in China, it is mainly used in the flavouring sector for meats, sauces and bakery products. It has also been used in perfumes and cosmetics.

Cinnamon leaf: Competes with clove oil as a starting material for the production of vanillin. Main source is Sri Lanka.

Citronella: Also from Sri Lanka, used for scenting soaps, disinfectants and polishes. A different variety is found in Indonesia and China, and is more suitable for aromatic isolates.

Clove: Derived from the flower of the clove tree, largely found in Madagascar and Indonesia, it is popularly known as a flavouring for meats, sausages, sauces and pickles. However, it also has uses in pharmaceuticals, perfumes, mouthwash, toilet waters and soaps.

Coumarin: Another source of vanilla flavouring which is ultimately used in the ice cream and confectionery industries. There is a strong industry in France, which is currently attempting to keep Chinese product out of the EU market, alleging there has been some dumping.

Eucalyptus: Largely from Portugal and China. A wide range of industrial uses can be found, including the production of turpentines, distillation for medicines, and as a constituent of sheep dips.

Geranium: A misnomer, as it is not derived from the geranium but several other plants. It has a strong, rose-like odour and blends well into scents, which has made it popular in the perfume industry.

Ginger: Chinese and Indian origin product is popular. Derived from one of the world's oldest spices, ginger oil has a warm, pungent taste and a pleasant odour which makes it popular as a flavouring, especially for bakery products and spicy sauces.

Heliotropin: Not a natural product but a derivative of sassafras, it is produced largely in Spain and China and has uses in the perfume industry.

Lavender: It has a clean, sweet odour which makes it a good blender for perfumes and toiletries. Found in France, Argentina and the USA.

Lemongrass: A citroil constituent with a powerful odour, can be used for scenting soaps and detergents. Often regarded as an alternative to litsea cubeba. Mainly from India and Guatemala.

Lemon: Widely used in beverages, soft drinks, tablets, bakery, confectionery, ice cream, toilet waters and cosmetics. A wide range of supply sources, including Italy, Argentina, Spain, California and Brazil.

Lime: A flavouring for non-alcoholic beverages such as ginger ale, and in confectionery and bakery products. Again a wide range of sources, including Mexico, Florida and the West Indies.

Menthol: A synthetic from the penapropyl plant, its market is contested by China, Brazil and India. Popular with cigarette manufacturers as well as the pharmaceutical industry.

Musk: Showing signs of a worldwide decline after being dropped by some major toothpaste manufacturers. Also used in perfumes.

Orange pera: A food flavouring, largely from Brazil but recently in very short supply.

Patchouli: From a plant in the labiatae family, a strong character oil, which gives it a good niche in the perfume and soap industries. Also has a historical use as a perfume for woven products. Mainly from Malaysia and Indonesia.

Peppermint: Often regarded as nicer tasting alternative to menthol, although it has the added advantage of being a good gastric stimulant with antiseptic qualities. This has made it popular in dental products, cough drops, confectionery, chewing gum and alcoholic liqueurs. Traditionally sourced heavily in the USA, now China and Brazil have emerged as major forces in the market.

Petitgrain: Comes from distilled leaves and petals of certain orange trees. Used in eau de cologne, with Paraguay the leading supplier.

Sandalwood: Extracted from trees on eroded mountain slopes, largely in India. A perfume fixative and blender for cosmetics.

Sassafras: American in origin but now big in China, it comes from a tree bark and is said to be good at reducing high blood pressure. Used in flavouring, notably for sarsaparilla and root beer drinks, and in gums, mouthwash and dental products.

Spearmint: Comes from a different plant to peppermint oil, found in China and North America. Popular in chewing gums and toothpaste, but does not share peppermint's medicinal qualities.

Terpineol: A by-product of pinene used as a disinfectant.

Vetivert: Big in the perfume industry due to its heavy, oriental type odour. An overdose could lead to a strong 'woody' smell. Indonesia and China lead the market.

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Essential oils remain firm

ESSENTIAL oil markets are 'remaining generally firm' as the close of the Chinese Autumn fair brought some indicators as to the direction of prices. Except for spearmint oil, menthol and peppermint oil the fair 'attracted little excitement', said Paines & Reid's latest Essential Oils Report.

Spearmint oil saw higher prices ahead of the fair and this 'awoke a good deal of interest in all sectors of the trade.. this was to be expected if one took the menthol and peppermint situation as a lead,' it said.

Prices continued to push ahead once the fair started and have 'remained bullish ever since'.

Cardamom oil stocks are available in Europe at the moment but dillweed remains 'tight' because of the long summer drought. Present tightness is 'still dependent on whether the American consumer trade is able to satisfy its needs in the local market. Prices are firm.'

Cumin seed oil prices are 'stable and we do not anticipate higher prices until the end of the season, in early 1995.'

The report noted that prices of seed from origins such as Iran and India have fallen from $1,600/tonne to $1,400/tonne. Stocks are 'sufficient to cover demand'.

The caraway harvest in Eastern Europe is four weeks early this year and quantities are low. Prices should react to this situation soon. The cinnamon leaf oil market is also 'firm' but there is still more demand than supply. Nutmeg oil has risen sharply and the report expects that prices will rise further in the next few weeks.

'We expect further price increases as the extent of the small crop is known'.

Pimento leaf oil has seen 'good offtake of near material and stock is virtually non-existent'. Bay oil remains tight and activity is 'steady', it said.

On citrus oils, the prices of both Brazilian orange oil and d'limonene have 'risen sharply and the 'supply and demand situation has reached a critical point'.

Prices are forecast to move higher, although grapefruit oil prices remain unchanged. Alternatives such as Mexican lime are stable, but difficulties lie ahead later in the season.

Vanillin prices are being affected by high-priced Chinese material, which is being 'resisted' by the European trade. Lower availability of clove leaf is affecting oil availability, which has strengthened prices.

The Public Ledger December 5, 1994

CINNAMONBARK OIL—Forward shipment prices have dropped considerably in the past month due to an overabundance of product.

Cinnamonbark oil 50 percent, 55 percent and 65 percent are currently going for $230, $255 and $300 per kilo c.i.f., respectively. Before the oversupply, the three grades of cinnamonbark were as high as $325, $350 and $365 per kilo c.i.f., respectively.

Commenting on the price drops, one broker says, "The supply was so great that if the price wasn't lowered, the distributors would have been stuck with a huge amount."

Chemical Marketing Reporter September 19, 1994

NUTMEG OIL—Due to low profit margins, some producers have dropped out of the market and prices have started to rise, but sellers aren't indicating if the price will climb more in the coming months.

Indonesian prices have already started to climb and could continue to do so through the end of the year. List price for Indonesian nutmeg oil is currently at $10.50 to $11 per kilo c.f.r. Back in April, the market price was as low as $8.75 per kilo c.f.r. The spot price has remained consistent and is holding steady at $6.25 per pound, according to one broker's quote.

"The price has gone up in the past months, but I can't say for sure if it will continue," says one seller.

Chemical Marketing Reporter September 5, 1994

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Less Clove Oil, Eugenol Seen Only in the Short Term

Chemical Marketing Reporter July 25, 1994

Prices for Indonesian clove oils keep rising as that country's farmers are still reeling from the harsh rains during the first half of the year. Eugenol is following the oil up in price as less and less material appears on the spot and forward markets. But the wild nature of the crop leads to quick regeneration and leaf harvesting, so shortages are not expected to be long term.

Since cloveleaf oil is 80 to 90 percent eugenol, it is the main feedstock for eugenol, so whatever happens to the crop will surely affect its isolate. Since April, according to one Northeast broker, Indonesian cloveleaf oil's forward contract price has firmed from $2.60 per kilo, c.f.r., to between $2.90 to $3.40 per kilo. The spot price is $1.50 per pound. And eugenol's forward price climbed from April's high end of $4.80 per kilo, c.f.r., to $4.90 per kilo. Its spot price is between $2.70 and $3.50 per pound.

LONG TERM HEALTH

One broker claims the damage brought on by the rains is of minor consequence for the long-term health of the market. "Export numbers from these countries usually follow the rain cycles," says one broker. Essential oil of cloves export statistics from Department of Commerce show that supply swings of as much as 200,000 pounds from year to year are normal.

Through March of this year, Indonesia's clove oil shipments have dropped off over 130,000 pounds from the same period last year to 97,000 pounds.

So while it appears overall supplies of eugenol are drying up—Indonesia tallied up a mere 71,442 pounds of eugenol for this year through March compared with 187,866 pounds for the March mark in 1993—supply is just in a traditional low period.

This also helps explain why other key suppliers have not stepped in to help fill the Indonesian void. Madagascar, for example, which exported over 250,000 pounds of clove oils to the US in 1992, almost as much as Indonesia that year, has only managed to send around 43,000 pounds through March; during the same period last year, Madagascar exported nearly 105,000 pounds.

The relative ease with which supply can be replenished is the main reason for Indonesia staying at its customary number one spot in the clove oil and eugenol trade. It also helps that Madagascar's clove oils other than cloveleaf are relatively expensive.

Madagascar's pricing has been steady over the last few months with forward contracts for cloveleaf oil at FFr15.50 ($2.88) per kilo, c.f.r., and clovebud oil at $24 per kilo, c.f.r. The spot price for cloveleaf oil is unchanged from April's price of $1.50 per pound, as is the case with clovebud oil's spot price which is between $13 and $15 per pound.

Singapore has sent nearly 25,000 pounds to the US, and Spain and the Netherlands have sent minor amounts, but these imports reflect diverted shipments from Indonesia and Madagascar sent through agents in those countries. But it adds to supply all the same.

Essential oil prices begin to climb

by Katherine Moore

Prices of an increasing number of essential oils and aroma chemicals have started to rise above their historically low level, according to a new report by UK traders Fuerst Day Lawson.

An optimistic mood from buyers in foreign countries has been sustained though the first half of the year. This has provided scope for exporters to achieve price increases on some items, despite the stiff competition among themselves to find business.

Business with China, one of the major supply countries, has escaped any disruption following recent financial changes implemented by the government. Amendments in exchange rates taxes reportedly nullified each other in their effects on exports.

Renewed demand has sent Java type citronella oil prices from Java and China up, as an anticipated improvement in supplies during the second quarter has not materialised. Currently, Chinese citronella oil is traded at around $8.00/kg cif.

The Sri Lanka type has been in very short supply due to a lack of raw material, and prices are rising sharply. Camphor synthetic prices have also firmed. Increasing costs of production and raw materials in China have resulted in a firm trend for all grades. For cardamom oil the anticipated lower prices have not materialised as a result of continuing firm prices for oil.

Higher prices are expected for the new crop of menthol crystals from China, as a 30% reduction in availability due to hot weather has been reported. Shipment during July and August will be restricted, although current stocks remain plentiful.

A 30% decrease is also expected for the new crop of peppermint oil, with prices forecast to increase in the fourth quarter of the year. In the short term, however, sufficient stocks in Europe, the US and at origin have weakened prices.

Production of spearmint oil has been cut drastically by the Chinese government as a result of an oversupply two years ago. Output was cut by 60% last year and further cuts are being made this year. So far the market has not reacted to the cutback, and the prices remain fairly low at $5.75/kg cif for 60%, compared with $6.50 a year ago, and $7.80 cif for 80%, down from $7.50.

Chinese geranium oil output for this year is expected to be 80-100mt with prices for stock material at a premium of $60.00/kg cif.

Commodity Week July 16, 1994

Indian firm aims at US

A NEW production plant for spices, essential oils and herbs destined for the US market is to be set up in Karnatake, India. The companies setting up the plant describe it as the country's first 100% export-oriented unit aimed at sales to the US *(Raju Chandran in Bombay)*.

It is a Rs83.6m joint venture between South East Agro Industries and Natex, an Austrian company, and will make use of what the two firms say is a new technology called 'super critical fluid extraction'. This uses carbon-dioxide instead of the solvent extraction method used by Indian factories catering for domestic demand.

G. Banan, director of South East Agro, told reporters that new presses would ensure the final product is free of any residual solvent.

He added that the factory, will have a full capacity of 60 tonnes/year, and that it should be producing 90% of this after five years. It is due to go on stream next year.

By the end of the fifth year, it is expected to earn foreign exchange equivalent to Rs227m, and the company plans to float a public share issue for a sum of Rs39.8m later this year.

The first phase of the unit is set to produce tumeric, cardomon and nutmeg extracts, and later diversify into vanilla, cloves, ginger and red chilli. Banan said the export demand for these is tremendous, and that the plant's selling prices would achieve a premium over those using the conventional extraction methods.

Public Ledger October 8, 1994

Citronella Oil Adjustments Reflect Changing Economies

Firming over the past year in the citronella oil market reveals long-term supply concerns created by shifts in Third World economies that supply the essential oil.

Sri Lanka exported over 22,000 pounds less in 1993 than in 1992 for a total of 53,000 pounds. A key reason given for the supply drop, which may apply to other essential-oil exporting countries, is that laborers are leaving the agriculture sector for jobs in expanding industrialized areas.

The same might be said for Indonesia, where the economy is growing at a strong pace. In 1992, the country exported nearly 78,000 pounds of citronella oil; last year, it managed to export just over 53,000 pounds.

FACTORY DRAIN

Industrialization, though, isn't the only problem with Indonesian citronella oil. "Prices from Indonesia are usually at a premium compared to the Chinese," says one broker. "Accordingly, buyers who are not too concerned with quality are choosing the less expensive Chinese oil."

Quality, the broker adds, is not a paramount consideration when it comes to this particular essential oil. The effect of really bad weather on Indonesia's crops has also been blamed for drastically increasing essential oil prices.

Industrialization is, however, a big problem for Chinese essential oil producers. "They are losing large chunks of viable agricultural areas to huge factories, and because these large factories need workers, a lot of farm workers are heading to the higher pay of big industry," says the broker.

This seems to be contradicted by the fact that Chinese citronella oil exports last year hit a five-year high. Some 1.4 million pounds entered the US last year, over 400,000 pounds more than in 1992.

But a broker explains that this may be because most citronella oil from China is contracted heavily in advance, so current market influences may take a few years to appear in contract prices.

Overall, citronella imports to the US were up substantially to nearly 2 million pounds last year, due to the sharp increase in Chinese shipments.

And so are prices. Because most countries that export citronella oil are experiencing tightening supply, and China is the largest supplier, the Chinese push up their prices for more valuable forward contracts.

Right now, the forward shipment price for Chinese citronella oil, 85/35, on a nominal basis, is between $7.80 and $8 per kilo, c.i.f. The New York spot price is between $3.90 and $4.20 per pound. In January 1993, prices were low as $4.30 per kilo.

Other citronella oils are similarly priced. Sri Lanka, ordinary, has just been reinstated by a Northeast broker due to a new crop that replenished stocks somewhat. Its New York spot price is $5 per pound, and its forward shipment price, on a nominal basis, is $9 per kilo, c.f.r.

Citronella oil from Java, also being forward contracted on a nominal basis, is selling between $7.50 and $7.85 per kilo, c.f.r. Its spot price is between $4 and $4.80 per pound. South American citronella oil is unavailable from source, but some supply is being traded on a spot basis for $3.90 per pound.

Citronella oil derivatives have been tumbling as a result of these higher prices. Last Year, citronella from China was selling for $7 per kilo, c.i.f. This year the same product is selling for $9 a kilo, c.i.f.

As summer approaches, distributors speculate that the increased buying of insect repellants and candles that use citronella as a main ingredient will firm prices further.

But due to forward contracts, any uptake in end product buying should not directly effect citronella prices.

FLAVORS INDEX

WEEK ENDING JUN. 3, 1994

The Flavors & Fragrances index reflects the prices of 8 representative materials in t his sector and the quantity of each produced in 1993.

Jun. 3, 1994	99.61
May 27, 1994	99.61
May. 6, 1994	99.61
Jun. 4, 1993	78.31

CHANGES/UP

None

CHANGES/DOWN

None

Chemical Prices Start on Page 26

Chemical Marketing Reporter June 6, 1994

Ensuring quality in spice exports: example of India

By C.K. George

India is the leading country in the production, consumption and export of spices. Almost all spices are grown in this country, with the important ones being black pepper, cardamom, ginger, turmeric, chilli, coriander, cumin, fennel, fenugreek, celery, saffron and garlic. An estimated 2.2 million tons of spices are produced annually. Although most of the output is consumed within the country, a sizeable quantity is exported, to over 70 foreign markets. During 1992-93 about 123,265 tons of different spices and spice products were sold abroad, coming to US$ 130.77 million. In terms of value, spices constitute about 5% of the agricultural and related products exported from India. As most of the spices are high-value crops, their cultivation plays a significant role in the rural economy.

Export quality control

The need for introducing quality control in the export of various agricultural commodities including spices was realized in India a number of years ago. Quality has been a tradition in the Indian spice trade, and to keep this trade in line with developments outside, the Government wanted specifications to be followed for a number of spices. As a result, grade specifications were prepared for pepper, ginger, cardamom, chillies, turmeric, garlic, coriander, fennel, fenugreek, celery and curry powder under the Agricultural Produce (Grading and Marking) Act, called "Agmark Grades."

C.K. George is an ITC consultant on spices and Executive Director of the Spices Board of India. This article is based an article that he wrote for a recent issue of ITC's Export Quality bulletin.

The Scheme for Compulsory Quality Control and Pre-shipment Inspection for these spices was introduced in 1963 with the assistance of the then Spices Export Promotion Council. This scheme was later extended to other important spices in a phased manner.

A comprehensive act, the Export (Quality Control and Inspection) Act, was introduced by the Government in 1963 with amendments in 1984 to streamline and strengthen the inspection and testing system for exports of all commodities from India.

> Spice cultivation plays a significant role in the rural economy.

To prevent adulteration of food materials including spices, rules were framed under the Prevention of Food Adulteration Act of 1954. Quality standards for various commodities including spices have been prepared by the Indian Standards Institution, now called the Bureau of Indian Standards. These standards have higher quality specifications than those prescribed under the Agmark grades.

The quality inspection procedures were liberalized in 1991, and the provisions under the Export (Quality Control and Inspection) Act of 1963 no longer apply to exports of agricultural and food products including spices for trading houses and export houses recognized by the Government. This relaxation has also been given to the manufacturers and exporters of agricultural and food products under the system of in-process quality control approved by the Export Inspection Agency. The regulations for compulsory pre-shipment inspection do not apply to exports of agricultural and food products, provided the exporter has a letter from the overseas buyer stating that the overseas buyer does not require pre-shipment inspection by any official Indian agencies. The letter must be filed by the exporter with the customs authorities at the port of shipment.

Quality programmes

Special programmes have been initiated since the inception of the Spices Board in February 1987 for improving the quality of spices produced and exported from India. A series of seminars and workshops for growers, merchants and exporters has been conducted by the Board jointly with the Export Inspection Agency and the Directorate of Cocoa, Arecanut and Spices Development under the Union Agriculture Ministry, which has also taken up a programme for improving processing of pepper, turmeric and chillies at the farm level by conducting demonstrations in all important producing centres of these spices.

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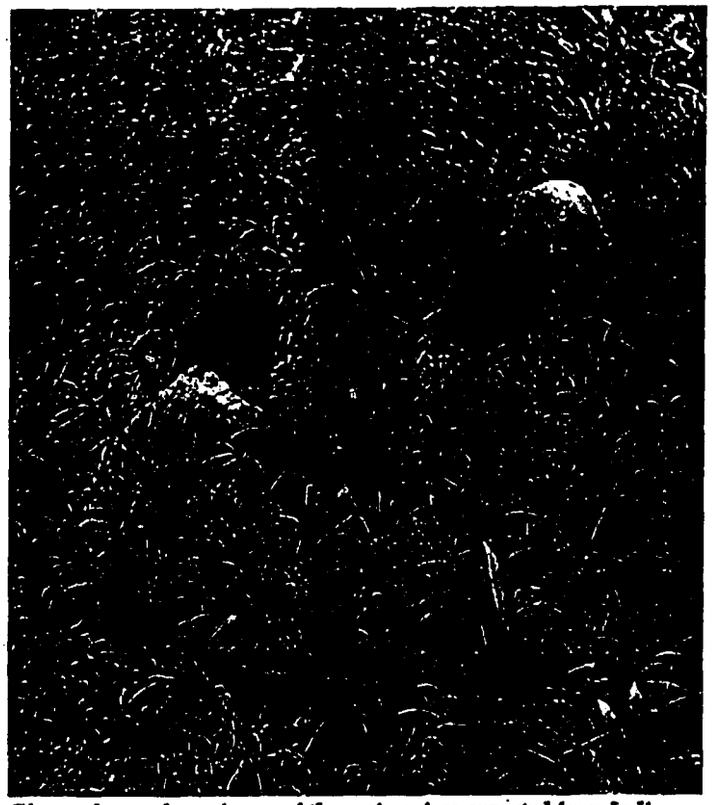

Ginger, shown above, is one of the main spices exported from India.

The Kerala Agricultural University and the Department of Agriculture in Kerala undertook a massive campaign with the assistance of the Spices Board in educating the growers on better methods of harvesting pepper as a part of the observance of 1989-90 as "Pepper Year." So far 34,750 farmers, 950 agricultural officers and extension workers, and 375 traders and exporters have been trained for quality improvement of spices in different states in India.

The Spices Board decided to give a new thrust for quality management programmes in the VIII Five Year Plan that commenced in 1992-93. A number of programmes have been proposed to be taken up to improve the quality of spices, especially black pepper. The programmes envisaged are the training of 500 specialists, 3,750 village-level workers and 55,000 growers for pepper, and 750 specialists and 12,000 growers each for ginger and turmeric. To obtain a high degree of success in these programmes, the concept of village adoption is practiced where pepper is grown intensively.

Pepper Protection Councils or farmers' associations formed in the pepper-growing areas are actively involved in all of the programmes on pepper. Assistance is extended to exporters to establish processing and cleaning units and small laboratories for quality testing. In addition to these, warehouses and sophisticated cleaning plants will be established near the ports or marketing centres as a common facility.

During 1992-93 training programmes were conducted for pepper, ginger, turmeric, fennel and cumin separately for specialists and growers. The specialists were given one to two days of training. The topics covered were quality improvement at the farm level, quality requirements of importing countries and quality testing before shipment. The trainees were taken to testing laboratories, well maintained warehouses, cleaning and grading units, and ports. Each programme was attended by 25 to 30 farmers.

Quality mark

As part of its activities for exports of spices in consumer packs the Spices Board launched a logo as a mark of quality assurance. The regulations for awarding the logo were published on 31 January 1992 by the Government. The logo is available only for consumer packets of one kilogram and less. Quality specifications have been drawn up for both spices and packing material. At present only pepper, cardamom, ginger, turmeric, chilli, coriander, cumin, fennel and fenugreek in whole or powder form and curry powder are covered under this scheme.

The logo is permitted to be used by exporters who have the necessary infrastructure to supply quality spices and have a good track record in this field. Wide publicity is being given abroad to the logo.

continued on page 30

TEN COMMON MISTAKES IN SPICE PURCHASING

Specifications are an absolute necessity to protect your product integrity and uniformity. Also, specifications provide a realistic written understanding between you and your supplier. While specifications can and must protect you, they can and at times do punish your costs needlessly. The larger your organization, the greater the opportunity for the system itself to add to raw material costs unintentionally. According to the American Spice Trade Assn., New York, here are the ten most common mistakes made in purchasing spices:

Over-Specifying: Adequate specifications are a necessity, but overly involved specs can add to costs. Example: a spice company ordinarily achieves desired granulation in spices with a two sieve system to remove particles too large or too small. Specs which require more than two sieves simply force additional processing and this increases the cost.

From a practical standpoint, using more than two sieves doesn't materially affect performance. The same can be true with requiring too many analyses, which increases costs at the customer's lab as well as the supplier's.

Under-Specifying: By the same token, loosely written specs. can be counter-productive. Example: Failure to specify a particular origin when it makes an important difference. The chemical analyses can be comparable, but the profiles of flavor may be different between two origins of the same spice.

Being too rigid : We live in a changing world and the spice world changes as rapidly as the political scene, because the two are inseparable. Spice specifications need continuous review and frequent updating. Example: Last year's particular origin or grade may not be available this year or may be higher priced. Would another perform as well? Being too rigid, or out of date, can waste money.

Failure to use spice suppliers properly : When new products are being developed or formulations changed, the modern, full service spice supplier can be a tremendous help. His knowledge of spice performance the relative merits of different types of seasoning products (naturals, extractive and combinations) is freely given and something the customer should use.

The same is true in developing specs. The supplier can help devise specs that will be adequate for the purpose, but not overdone. Its up to the customer to test samples thoroughly and then maintain a quality control surveillance on all subsequent deliveries. But when seasonings are being "shopped" and specs set up, customer and suppliers should have a co-operative relationship.

Trying to be a Spice Expert:
The seasoning business is very complex and getting more so all the time. The sheer numbers of products and forms of them being offered today and the way the scene changes makes it all but impossible for a customer to equal the up-to-the-minute knowledge of his suppliers. The only practical answer is for the customer to acquire enough general knowledge to ask

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intelligent questions and recognize valid information, but beyond that he should make sure he deals only with people he can trust. It is prudent to cross check new information, just as is done with prices, but it is equally important to keep an open mind.

Using too many suppliers:
Having more than one source for seasonings is good purchasing practice. This is not simply to check prices, but also to insure constant supply. However, it is a serious mistake to spread the business too thin. Using more than two or three spice houses in a given area of seasoning lessons their incentive to serve you.

Being Pennywise and Pound Foolish : It takes roughly 12-14 oz. of spice to season 100 lbs. of sausage. Through avid shopping, the buyer may be able to save 7 - 8 cents on the spices. But that penny saving could also ruin a product which has a retail value of $ 200 or more. It doesn's make sense. A typical example is the buying of spices in original containers at point of import. The price may be lower, but the merchandise isn't comparable to what comes from a spice company. Material at the port isn't meant to be marketable as is. Inspections and import standards only confirm that condition of the spice is within the limits which a spice company can work with in doing the final necessary cleaning.

Accepting Bids which aren't really comparable :
Two samples meet the specs. One is less expensive. Or is it? Really? Are the two suppliers comparable in service and reliability? This could be the difference. No bids are comparable unless the people behind them are equal. Consistent quality, ready availability and on-time deliveries can be as important as the price.

Overstocking : It is a mistake for a customer to store more spice than he needs for current usage. Let the suppliers do as much of the storage as possible. It is smart to contract for future delivery when a price is right, but don't take the delivery until it is actually needed. The companies store whole spices for the most part and they are very durable. They grind only as ordered. The customer, on the other hand, usually stores ground product which is more perishable.

Buying a flavor instead of a flavour result : The first concern of a customer should be for the result he wants. If the suppliers are sufficiently informed about the product, they are in the best position to make the seasoning recommendation.

They will need to know, for example, will the product receive high heat processing ? Will it be reheated at home ? What medium will carry the spice-oil water,starch ?Is the spice to be featured (i.e. cinnamon rolls) or will it be simply supportive in the total flavour ? Will the packaging protect against volatility ? How long a shelf-life should it have?

Spice buying today, as never before, needs to be a two way street if the customer is get the best buying.

Source : Food Engineering, Clean Spices Handbook

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The Public Ledger

Established 1760

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RECEIVED 15 FEB 1995 Agent

Ginger shortage boosts prices

NIGERIAN ginger prices have shot up more than 50% in the last month, caused by an increasingly tight supply situation out of the West African country. The hike comes after three years of low prices and oversupply.

Nigeria is one of the three main ginger producers but its prices have traded at a substantial discount recently. The wave of unrest in the country and economic turmoil has led to debt problems and a lack of hard currency. This resulted in ginger being sold almost at any price in order to raise cash. Nigerian ginger has been trading at $800-900/tonne, while Chinese supplies have been traded at $1,000-1,200/tonne and Indian at $1,800-1,900.

According to yesterday's prices in The Public Ledger, ginger is currently trading at £650/tonne for Nigerian split spot, $1,800/tonne for Cochin cif, $1,400/tonne for Chinese whole, $1,100/tonne for Indonesian sliced.

'Political problems allied to the generally poor harvest have started to feed through into higher prices,' said a London trader.

The new crop usually starts to arrive between November and January, but exports have been extremely low and traders report that almost no supplies are reaching Europe.

The rise in Nigerian prices is not expected to influence the Indian and Chinese prices, however. The premium asked for ginger from these sources is closer to the realistic world price level, and both countries seem to sell enough at the higher price. 'They don't feel they have to compete with Nigerian ginger because their markets are assured,' explained the London trader.

Statistics on the ginger trade are rare but traders estimate that at least 2,000 tonnes is imported into the UK annually, and a smaller amount, about 1,000 tonnes, is sent to western Europe. Eastern Europe and Russia receive about another 1,000 tonnes, said the source. The Middle East is another large destination for the commodity.

Dry ginger is mainly used as a powder and added as a flavouring for confectionery and baking, as well as an ingredient in curry powder. Some fresh ginger is finding its way into European supermarkets but volumes are smaller and mostly come from other producers such as Brazil and Indonesia.

● The mint market has 'weakened somewhat from its dizzy heights of October-November but material is being picked up at the weaker prices,' said Michael Norris, of London traders Paines & Reid. 'We feel there is no way the market is going to go back to the low levels of September and earlier, which we all agree were too low.'

Almond Board drops export backing

EXPORT promotions have been wiped off the slate for the Almond Board of California for the foreseeable future. Members decided at a meeting earlier this week that the Board should not apply to the US federal government for financial support for generic advertising overseas.

This raises a question mark over whether the industry will be stuck with an uncomfortably large carryover at the beginning of next season. Last year it produced nearly 684m lbs on a kernel basis, the largest crop on record.

The Board's decision to withdraw from foreign promotions was caused by the uncertainty created by a legal challenge by the Cal-Almond company. This is likely to drag on for some months, and has effectively reduced the options.

A spokesman for the Board said: 'To apply for backing from the US Department of Agriculture we have to show what funds we were ready to commit for advertising overseas. The uncertainty surrounding the litigation made it impossible to make the pledge.

'We may have taken a different course of action if we could have waited until summer; but that was not a real option. There is no decision yet on whether the Board will do any domestic advertising.'

Any foreign promotions will be in the hands of the branded companies until the situation is resolved. The question is whether it will be settled in time for next season's marketing.

Recent figures have encouraged some shippers to believe that the absence of Board generic promotions has not damaged their export business. The latest issue of Pacific Fruit News reported that shipments were on course to hit 600m lbs by the end of the season, up by 43.6m on last year, and encouraging a projection that the carryover, after deductions for the reserve, would be just 17.2m lbs.

Bill Wright of Blue Diamond Growers commented: 'This year's large crop is likely to be a godsend, given the poor expectations of the 1995 Spanish crop.'

Although the next California crop is expected to be smaller than 1994's, growers have taken heart from recent rains, and do not foresee any problems with water supplies.

Brazil grows more soya

A GOOD soya crop has been forecast for Brazil this season, following favourable weather in the main producing states of Rio Grande do Sul, Parana, Mato Grosso and Mato Gross do Sul. Analysts expect yields to be as high as 3.0 tonnes/ha in some areas, and have forecast a total crop of 25m tonnes, slightly above the 1993-94 level *(Patrick Knight in Sao Paulo)*.

By January 26, 52% of all soya was at the flowering stage, compared with 40% last year and an average of 42%. Fruit was forming on 25%, compared with 21% and 20%, according to the Safras e Mercado newsletter.

The crop is developing more slowly in Goias, Minas Gerais and Bahia due to lack of rain, but their contribution to the total is smaller.

The neighbouring countries' crops have been forecast at 12.5m tonnes for Argentina, 2.0m tonnes for Paraguay and 600,000 tonnes for Bolivia. The total South American soya crop should reach 40m tonnes, up from 38.6m last year.

With a good US crop expected, prices are anticipated to fall, causing farm incomes to be lower than in 1994.

Russian grain loss mounts

FIGURES for Russia's grain harvest in 1994 have been revised downwards yet again to 81.3m tonnes, making it the worst for 13 years, according to final State Statistic Committee figures. This compares to a harvest of 99.1m tonnes in 1993 *(Judith Perera in Moscow)*.

Wheat was down from 42.5m to 32.1m tonnes. Rye was a third lower at 6.0m tonnes and the corn harvest was 900,000 tonnes. By the end of the year 16m tonnes of grain had been delivered to stores, including 2.2m to the federal reserve.

Final figures for sugar beet are 13.9m tonnes compared to 25.5m in 1993. Sunflower seeds for sowing were down slightly at 2.6m tonnes compared to 2.8m in 1993. The potato harvest was down to 33.8m tonnes from 37.7m.

Plant Genetic Resources Newsletter, 1994, No. 98: 1

Genetic resources of ginger (*Zingiber officinale* Rosc.) and its conservation in India

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Summary
Ginger (*Zingiber officinale* Rosc.) is believed to have originated in southeast Asia and now occurs only under cultivation. India is one of the world's leading ginger-producing countries. Ginger is also grown in almost all tropical countries (southern China, Taiwan, Philippines, Sierra Leone, Jamaica, Nigeria, Indonesia, Malaysia). Many landraces and improved cultivars of ginger which excel in yield and one or more quality traits are available in India. Considerable variability for yield and yield-contributing traits are found in India's ginger germplasm. Geographical spread accompanied by genetic differentiation and divergence into locally adapted populations might have been responsible for the variation encountered in this clonally propagated crop. A germplasm conservatory with 475 accessions of ginger and 988 accessions of related taxa is maintained at NRCS, Calicut.

Introduction
Ginger (*Zingiber officinale* Rosc.) is a rhizomatous herbaceous perennial, the underground rhizome of which is the source of an important spice. The ginger of commerce is the dried rhizome. Ginger is commonly used all over the world, especially in China where it forms an essential ingredient in most dishes. Ginger is used widely in the preparation of soft drinks and beverages such as gingerale, ginger beer, ginger tea, ginger wine, bitters, cordials and liquors, and in candies, pickles, sauces, preserves and bakery products. New products such as vitaminized effervescent ginger powders are now common. Ginger forms a major ingredient in the traditional medicine of India. Ginger oil is used in pharmaceutical preparations as a carminative, rubefacient and stimulant for alcoholic gastritis, dyspepsia, flatulent colic, etc. It is also prescribed as an adjunct to many tonics and stimulating remedies, and is used in veterinary medicine, in cases of indigestion in horses and cattle, in spasmodic colic of horses and to prevent the griping by purgatives. Related species, *Z. zerumbet* and *Z. casumunnar*, are employed as a hot remedy for coughs, asthma, worms and in skin diseases (Kirtikar and Basu 1984). Ginger also is used in certain toiletry articles.

The centre of origin of ginger is not clearly known, although it is believed to have originated in southeast Asia (Bailey 1949, Parry 1969). From there, ginger might have spread to south Asia which is now the predominant ginger-growing region.

Maximum variability for cultivated ginger exists in the northeastern region of India. Ginger was introduced into Europe in the 9th century AD (Lawrence 1984) and was brought to the Mediterranean region from India by traders during the 13th century. Purseglove *et al.* (1981) reported that ginger was known in Europe by the 1st century, in Germany and France during the 9th century and in England in the 10th century.

Zingiber is included in the tribe Hedychieae of Zingiberaceae, and in the series Zingibereae, which contains only one genus, *Zingiber* (Mabberley 1987). The genus *Zingiber* was divided into four sections by Baker (1880) and the cultivated ginger *Z. officinale* is included in Section II, Lampuzium. Baker (1880) described a total of 24 species of *Zingiber* from the Indo-Malayan region, while Gamble (1925) reported seven species from south India including *Z. officinale*.

Ginger was first described by Van Rheede in 1692 in his 'Hortus Indicus Malabaricus' the first printed document on the plants of the western coast (Malabar coast) of India. In 1807 Roscoe described *Z. officinale* from a plant in the botanical garden at Liverpool and referred to it as *Amomum zingiber* Wild (Sp.pl.1.P6). Linnaeus' *Amomum zingiber* is the basionym of the species. The genus *Amomum* of Linnaeus is a nomenclatural synonym of the conserved generic name *Zingiber* Boehm, so the correct name of ginger is *Zingiber officinale* Roscoe.

At present, ginger is cultivated in India, China, Taiwan, Philippines, Sierra Leone, Jamaica, Fiji and Nigeria on a commercial scale. India produces about 1 485 200 tonnes of ginger annually from an estimated area of 53 300 hectares. India's export of ginger during 1991-92 was 1 560 000 tonnes (Peter 1994). Ginger is grown in almost all the states; Kerala leads in area and production.

Many ginger cultivars, mainly identified by their locality of cultivation/collection, are prevalent in India. Many of these cultivars are confined to particular tracts only and are seldom known outside that area. These local races are facing the threat of extinction for many reasons, the most important being the rhizome rot caused by *Pythium* spp. and the bacterial wilt caused by *Pseudomonas*

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CHINESE GARLIC GLUT HITS WORLD MARKET

BY EMMA STEPHENS

OFFERS of dehydrated garlic from China are flooding the world market, reportedly causing the lowest prices and worst oversupply for years. According to one trader, the market has "completely collapsed" as buyers are inundated with supplies that cannot be absorbed.

Prices continue to plummet and some traders are reluctant to buy for fear that today's cheap price will become expensive tomorrow.

The problem is further compounded by the considerable carryover from the 1993 crop, the full enormity of which is unknown although thousands of tonnes are rumoured to be stored in China.

New dehydration plants and sales offices are reported to have sprung up all over China despite no corresponding upturn in demand. One province is thought to have eleven new facilities.

Some traders also blame the excessive supplies on the recent EU introduction of import licences for fresh garlic from China. Dehydrated garlic was not affected by the clamp-down on imports so growers may have processed more fresh stocks.

DEHYDRATES

The current market level for dehydrated garlic is difficult to determine, but recent offers for first grade garlic flakes are reported at US$1 100/tonne c&f with very light first grade flakes at US$720-800/tonne c&f. Powder is US$700/tonne c&f minimum.

The market may take some time to recover unless demand increases in Asian countries such as Japan and Korea.

After a relatively small garlic crop in the US this season, availability from this source is now said to be reasonably tight. Offers are nearly double those from China at around US$1 800/tonne c&f at present.

The Crushing of Chinese Garlic

British importers of Chinese garlic have had their market crushed by protectionism and bureaucratic bungling in Brussels.

When Abraham Bello, managing director of the UK firm Hillrex International Ltd, left work before the bank holiday weekend of Saturday May 29 to Monday May 31, his company had 500 tons of Chinese garlic in cold storage in a bonded warehouse in Holland.

Back at work on Tuesday, Mr Bello was to discover that an import quota for Chinese garlic had been introduced without warning by the European Commission over the weekend. And licences for the whole 5,000t of Chinese garlic the quota scheme would allow into the community during the next three months had already been allocated on the continent.

Hillrex was now left with over half a million pounds worth of garlic in stock and no licences to sell it in anywhere in the EU.

Mr Bello ended up firing off a letter of protest to the Intervention Board about his company's treatment. But they had been just as much in the dark as he had been. The safeguard measure against Chinese garlic had been published in the EU's official journal on Friday May 28 and posted to the board then. As it, too, did not return to work until Tuesday, it no sooner found out about the quota measure than it received a telex from Europe telling it the entire tranche of licences for the summer had been taken up.

It appears that British importers of Chinese garlic suffered because UK bank holidays were not important enough to figure in the imagination of bureaucrats on the continent. However, Mr Bello of Hillrex does not just blame the Europeans. He says the British government will "not lift a finger" to help him.

The Ministry of Agriculture, it turns out, has made representations in Europe over the treatment of British garlic importers. The Commission's view, however, is that it needs to act swiftly and without prior warning to stop speculative trading. It says it is within its competence to introduce regulations at any time.

Lawyers specialising in European affairs, who charge £400 an hour, have told Hillrex that it is not worth its while dragging out any case through the courts. So the company has been left to incur extra storage charges and to sell half a million pounds' worth of garlic at a substantial loss in lower priced markets outside the EU.

Ironically, one continental company which did receive licences to import Chinese garlic during the summer months, at a scaled down rate of 40.3 per cent of its application, was the Dutch firm of Exotimex, which acts as the European agent for the same Chinese garlic sender for which Hillrex has an exclusive agency in the UK. However, Exotimex is now worried about what will happen to it when the next tranche of licences are allocated for September.

Following the debacle over the quota rights for the summer, the Commission is now set to grant licences every month at the rate of 800t a month for September and October and 500t thereafter until May when the quota will reduce to 400t. These licences will be issued without any relationship to the size of a company's business in Chinese garlic in the past and it is widely expected that any licences will be scaled down to less than a single container's worth of garlic. In addition, any legal entity is eligible to apply for a licence - it is rumoured that continental firms are set to submit multiple applications in the names of diverse companies they do business with to obtain a reasonable share of the quota.

"The system is a farce," says Mr Bello of Hillrex. He complains that it

(continued overleaf)

You will not find Chinese garlic in these boxes.

(continued from overleaf)

forces importers to store Chinese garlic beyond its normal season and gives them very little time (a mere 40 days) in which to buy, ship and sell garlic from China.

John Lachy of Exotimex has a similar attitude to the system. "It is very dangerous for us. The problem with the European Council is that it is only concerned with community producers and not with exporters and importers," he says.

Restrictions on Chinese garlic have their defenders, however. French and Spanish growers are outraged by the presence of cheaper Chinese garlic in Europe and would like to see it excluded from EU markets altogether. The leading Covent Garden-based supplier of garlic, Louis Konyn & Sons, which imports from Spain and France, also backs the current quota system and supports European demands for a total ban.

In the UK, supermarket groups need not be directly concerned by the current Chinese garlic furore as major importers do not supply it to them. Britain's leading importer, pre-packer and distributor, Brookerpaks, for example, says it and other reputable companies do not supply Chinese garlic because it is not possible to get full pesticide usage records for the crop.

And at first sight, then, it looks as if the exclusion of Chinese garlic is only of interest to the wholesale sector. Yet by boosting prices on the open market, the restrictions in force on Chinese garlic could have some influence on supermarket purchases. In this context, however, it is worth noting that companies who have been unsuccessful in obtaining supermarket business complain that multiples are extremely insensitive to price as garlic represents such a small part of their business.

Despite its exclusion from the multiples, there are people who will tell you Chinese garlic can hold its own with imports from any other country. "The best garlic during the last two or three years has been Chinese," says Franco Pignatelli of FMX. This garlic specialist has 10,000t of Chinese production in cold store in Holland without licences and the bulk of this will now have to be sold cheaply in ex-communist countries and in other third country markets.

John Lachy of Exotimex also stands up for Chinese garlic. "It is not cheap because of its quality," he says. "There is a logical explanation for its price which is that labour in China is cheaper than in Spain. China also produces much more garlic than Spain, and this influences the price too."

There is in fact some disagreement and many nuances of interpretation among suppliers views as to the merits of the many garlic producing countries and the different varieties of the crop. Alexis Mul of the Spanish producer Aconsail champions Spain's red (Morado) variety rather than the white garlic which is most popular in Britain: "Red garlic is longer lasting. White garlic will only last five months but Spanish will last for seven. If it is kept at -4°C, it can be worked all year round," he says. The red garlic variety also produces a rounder bulb. Given these virtues, it is not altogether a surprise when Mr Mul reveals that some exporters will buy in garlic and call it Spanish.

Ian Lambert of Brookerpaks also rates Spanish garlic highly. He praises the regular shape of its plump, round bulbs which Brookerpaks sources 12 months of the year.

Mr Mul of Aconsail reports that more and more garlic is now coming from the newer Spanish growing region of Córdoba while the traditional area of Las Pedroñeras, Cuenca, known locally as the "Garlic Capital of the World", is now a less significant producer. Córdoba is increasingly popular because it can produce crops one month earlier and it has bigger sizes due to the region's higher temperatures.

When it comes to early varieties, however, Mike Farr of Mersey Farms, which supplies leading UK multiples with red garlic from Spain and Chile and white garlic from Hungary and California, is against them. "The earlier crop has been rushed and can only have a life of four to five weeks. It looks nice and white on the outside but the cloves can be yellow on the side and going green on the top. I wouldn't touch it with a bargepole," he says.

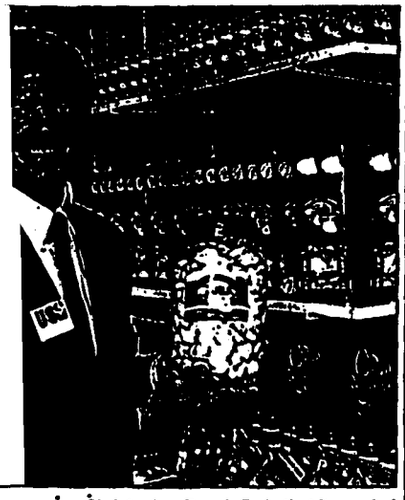
Mr Farr says every country's garlic is different and it is possible for an expert to tell which is which simply by looking at them, although it might be difficult to discern a difference between Hungarian and Italian. There are, however, probably only a dozen people in the country who could put all the different countries of origin of garlic on a table and successfully tell them apart.

There are now many garlic suppliers who insists the product is a known commodity and is not very exciting. With garlic in published recipes and receiving ample promotion by the TV chef Keith Floyd, one says supplying garlic is "just like selling shoes".

Mr Farr, however, takes the opposite view. "Most people still don't know about garlic," he says. "You walk round a supermarket and see the tubes, jars and bottles of garlic paste and powders being bought and you can see that people don't know about the difference in taste between these so-called 'lazy garlic' products and fresh garlic."

Elsewhere, the food manufacturing industry is catching

(continued on page 26)



The Californian garlic company Christopher Ranch finds that its peeled garlic sells well to the US foodservice sector. The UK, however, is more hesitant about the product.

(continued from page 24)

on fast to the benefits of fresh garlic. One major garlic user in this sector has just calculated, for example, that although it will cost it twice as much to use fresh garlic in its recipes, it will actually save money overall as it needs a substantially smaller quantity of garlic to achieve the taste it is seeking.

In fresh produce, however, Mr Farr maintains: "There is still a lot of rough garlic on the markets and in some supermarkets too...It breaks my heart when I walk into some places and see what is on offer."

In addition to ordinary, fresh garlic and its processed derivatives there are other presentations of the product available in the UK. There is elephant garlic which as its name suggest is larger than its normal cousin - its individual cloves can be the size of a bulb of ordinary garlic. Elephant garlic is milder and sweeter than normal garlic and sells very well, according to Ian Lambert of Brookerpaks.

There is also green or wet garlic which has not been dried out and has a stronger flavour than normal garlic. "This has a shorter shelf life which means that you cannot handle too much at any one time," Mr Lambert cautions. Brookerpaks, however,says it is well placed to expand into what it sees as a growing market sector from a quality supply base.

Garlic presentations get even more exotic. Mersey Farms, for example, sells smoked garlic into the produce departments of the multiple sector and even sells smoked, peeled garlic.

In Europe, there are many garlic companies who have invested in peeling machinery. Too many, in fact, according to Franco Pignatelli. "People went into it because they thought there was a good profit in it, but the consumption was not there," he says.

One firm to launch a peeling operation in France was Christopher Ranch, a noted Californian garlic producer. Marie Pfeiffer, the company's export manager, says its French operation has found it difficult to introduce peeled garlic into the UK distribution chain.

'We have developed a really good market for peeled garlic in the [US] foodservice market. Users in outlets ranging from hotels to hospitals find it easier to use'

'There is still a lot of rough garlic on the markets and in some supermarkets too....It breaks my heart when I walk into some places and see what is on offer'

In the United States, however, it has been a great success. "We have developed a really good market for peeled garlic in the foodservice market. Users in outlets ranging from hotels to hospitals find it easier to use." Another source of business for peeled garlic is the discount warehouse sector made famous by Costco and Price Club who have now merged to form Price Costco.

Just as the European Union has virtually shut its doors on Chinese garlic, so the United States has its own tariff in place, having filed an anti-dumping suit to defend its domestic industry from cheaper Chinese competition. Mexico, too, has acted against Chinese garlic imports into its own market, so raising the price of that portion of its production which heads north into the USA.

Marie Pfeiffer of Christopher Ranch speculates that eventually, as China grows richer, its costs of production will rise. But many in Europe say that in the meantime Chinese garlic is being rerouted to Europe through other Asian countries to beat the quota system. And the EU has now acted against imports of Taiwanese and Vietnamese garlic which could either be an alternative source of cheap imports for Europe or a front for the Chinese crop.

With Chinese garlic exports sweeping the world's markets, ranging from Eastern Europe to Brazil, a country which previously preferred Spanish garlic above all else, there is now little scope for European garlic producers to export outside of the European Union.

Even if China's costs do eventually rise, there are fifty other garlic producing countries throughout the world, some of whom could take its place as a source of cheap imports. In the years ahead, garlic is likely to prove to be a testing ground for the clash between free trade and protectionism in horticultural marketing.

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Garlic imports from Asia halted

THE EU Commission has stopped issuing import licences for garlic originating in Taiwan and Vietnam until May 1995. Since imports of Chinese garlic were restricted to 10,000 tonnes per year in June, licence applications to imports from Vietnam have leapt 680 per cent. Applications from Taiwan have increased by 4,611 per cent. The Commission plans to monitor the situation and says additional measures will be taken where necessary.

Garlic growers in France and Spain requested the further import restrictions on garlic from China after volumes from that country entering the EU rose 121 per cent in 1993 to 21,951 tonnes.

Eurofruit Magazine October 1994

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The Packer October 3, 1994

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Long haul to pepper surplus

TRADERS in white and black pepper can expect a long haul before the world market gets back to a surplus. Prices have been too low for too long, and there are not enough farms with productive vines planted to shift the balance of the trade.

One of the world's leading traders in the commodity, Man-Producten Rotterdam BV, has painted a picture of a very vulnerable market in its latest Pepper Report. It says that demand has been filled over the past year by a substantial liquidation of stocks, with any upsurge in buying interest immediately followed by a strong price advance. In the course of 1994, crops were disappointing and stocks were reduced, and there is little prospect of a substantial change in the situation.

'Since the majority of farmers have not yet started planting new pepper vines on a large scale, no significant increase in the world production of pepper can be expected in the coming years,' it says. 'In case farmers, stimulated by attractive prices, will start expanding the area under cultivation on a large scale, it will still take some years before the new vines will have reached their maximum producing capacity.'

In Man's previous Pepper Report it noted that a deficit had arisen for the first time since 1988, and it says there are two major features in comparison with a year ago. One is crops in 1995 will again fall well short of world demand, and the other that reserve stocks, which had been accumulated since 1988, have dwindled substantially over the past year.

'Whatever pepper may still be available is now in strong hands and will not be released easily,' it says. 'Since we fail to see from where drastic production increases may be expected for this year, we cannot but expect that prices will continue to develop firmer in 1995.'

The prediction has been borne out by quotes on white pepper since the beginning of the year. There have been rises from $3,750 to $3,900/tonne for Muntok white on European spot markets, and from $3,550 to $3,800/tonne for Sarawak on a cif basis. The Muntok price was as low as $2,600 less than a year ago.

Black pepper prices have been stable or even eased slightly, but its increases were even steeper last year. Lampong ASTA grade went from 73¢/lb c&f New York at the beginning of 1994 to touch $1.33 in October, and although it fell back in a corrective mood, it settled around $1.12.

On the production front, Indian pepper production totalled around 50,000 tonnes in 1993-94, limited by disease and poor flowering in the main growing areas. Man predicts that the 1994-95 crop will be better at 55,000-60,000 tonnes, but that a big improvement in the Idukki district will be partially cancelled out by continued losses in Wynad, the largest growing area.

India's carryover is said to be minimal, and export availability for 1995 depends entirely on supplies from the new crop. With a domestic consumption of at least 30,000 tonnes exports should be restricted to 25,000-30,000 tonnes.

Brazilian production has suffered from a failure to replace dying vines and reduced use of fertilizer. The only bright spot is in the Bragantina zone, where Japanese farmers are playing a long game with new plantings, and rainfall has been better than in most parts of the country. As a result, the current Brazilian crop has been estimated at around 23,000 tonnes, down from 25,000 in 1993.

A big handicap to exporters has been the surprising strength of the new currency, the real.

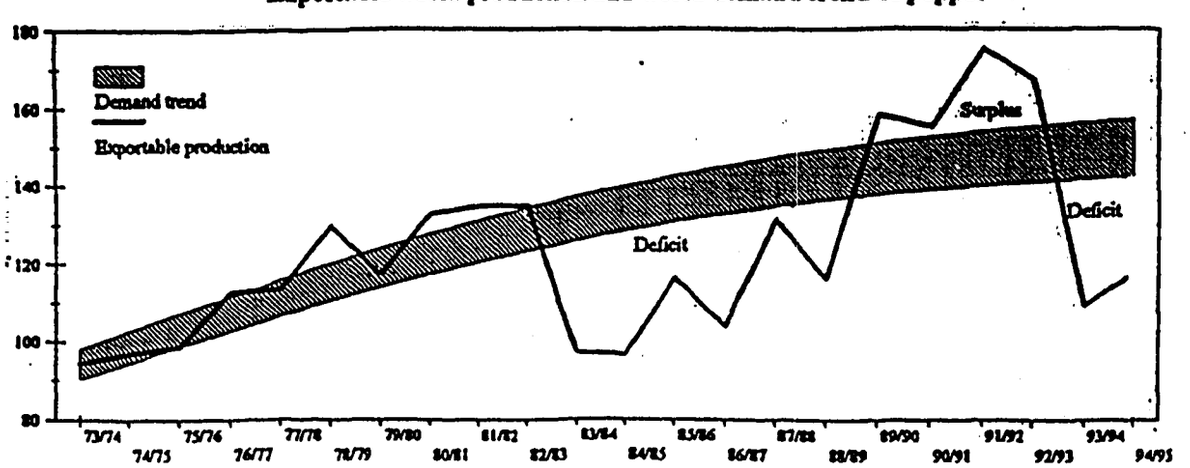
Indonesian output is estimated at around 15,000 tonnes. This is 3,000 tonnes up on the previous year, and could have been even better if not for an extreme drought during the ripening period. Also, it is well below the levels of 30,000 tonnes and over produced a few years ago.

Pepper growing in Malaysia has been suppressed by financial disincentives, and many farmers have reportedly abandoned their farms. The crop is estimated at 12,000 tonnes in 1994, and a further reduction is expected this year.

The surge in Vietnamese production was effectively halted in 1990 by a government decision to ban logging in the forests, and thereby deprive growers of the support posts used in pepper gardens. Production continued to creep up until 1993, when it was close to 18,000 tonnes, but industry sources have estimated a downturn to 15,000 for 1994, and there is little hope of a recovery in 1995.

Continued on page XI

Exportable world production and world demand trend of pepper



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Long haul for pepper

(Continued from page VII)

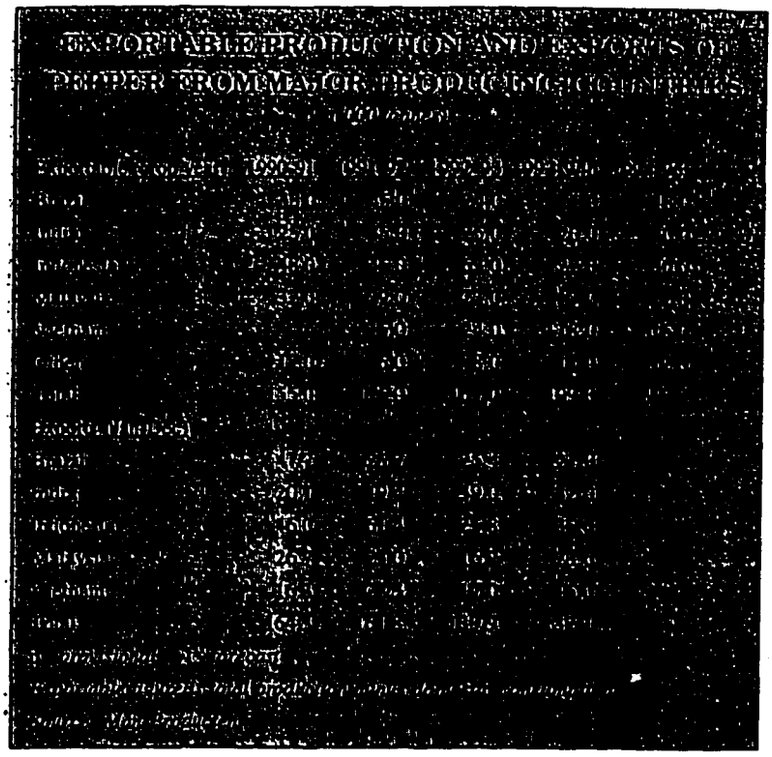
China is most important in the white pepper market, where its supplies can provide a buffer against any shortages. Annual production on the island of Hainan is estimated at 6,000-7,000 tonnes.

Demand exceeded production last year, leading to reduction in world stocks, and with no significant supply upturn in sight Man predicts that demand will be dragged down this year.

Consumption in western Europe is fairly stable at around 55,000 tonnes, but there is growth in the east of the continent as a few of its economies improve, with a forecast rise from 13,700 to 17,100 tonnes this year.

North American import demand has steadied at just below 50,000 tonnes, while that in Asia is relatively low. Despite accounting for 55% of the world population, its pepper imports total only around 15,000 tonnes/year, half of which goes to Japan. Of course, some countries enjoy a big domestic supply, but there is still a feeling that the strong growth in the region's economies should provide the basis for a rise in pepper imports in the future.

Africa is the weakest import region, showing a strong reaction when prices rise.



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Labour costs hold back Brazil's pepper future

Brazil's pepper harvest this year is set to be one of the lowest in recent years, in the range of 18-20,000 tonnes. The harvest starts in August in the main producing area in the state of Para, and ends at the end of October, while harvesting starts a month or so earlier in the newer producing areas in the south of the state.

Stimulated by the prospect of prices continuing to rise, farmers are beginning to plant the vine again in Para state. Arnaldo de Conto, a producer and a researcher at the Belem Eastern Amazon Agricultural Research Institute, thinks that Brazil's output will increase to 20-22,000 tonnes of mainly black pepper in 1995.

With plants starting to produce 18 months after planting, and reaching full production a year later, he predicts output increasing to 35-40,000 tonnes in about four years' time.

By that point, de Conto feels, labour and other costs in Brazil will have risen to such a level that it will not be possible for Brazil to produce pepper for less than $1,500/tonne.

As he predicts prices will fall to well below these levels in the next downturn, he thinks Brazil will subsequently only produce pepper for the domestic market, which consumes about 5,000 tonnes/year, and for neighbours such as Argentina.

De Conto says that the full time labour of one man is required to produce one tonne of pepper in Brazil. An investment of about $6/bush is needed between the time of planting and the first small production of about 1.5kg per vine occurs at the following harvest, after which production starts to decline.

In the traditional growing area, a restricting factor is the acute shortage of the 2.5 metre long posts which each pepper vine needs to support it, as a result of all the native forest having being removed in the area. Replacing them with cement posts is an option, although these retain the heat more than wood, which can be prejudicial.

It rains almost every day all the year round in the main growing area, so plantations must be weeded six or seven times each season, which is costly whether done manually or by machine.

Rainfall is less in the newer growing area in the south of the state and posts cost less there as well, but productivity of the vines is also significantly lower. De Conto says that taking everything into consideration, it costs between $1.30-1.35 to produce a kilo of pepper in Para state, and because the price has fallen to well below $1/kg in the past couple of years, most Brazilian growers have lost a great deal of money. Many of those who made major investments were bankrupted.

Because of the severe drought in the neighbouring north-eastern region in 1991-93, demand for cassava, which is normally produced there, has been strong, so many farmers in Para switched to growing this crop instead of pepper.

De Conto says that about 20% of the stock of pepper plants die and are normally replaced each year, while no cure has yet been found for the root fungus disease fusarium, which can decimate plantations.

Most of Brazil's pepper is sold to the US and countries in Europe, led by Germany. De Conto says that only a few producers go to the trouble of producing white pepper, which involves soaking the ripe black pepper in water immediately after it is harvested.

The discoloured outer skin produces a noxious waste which is difficult to dispose of, and the extra price of the product, which has sold at about $2/kg, makes the effort hardly worthwhile, he says.

The stock of pepper vines in Para, says Mr de Conto, now stands at about 20-25m, compared with 35-40m at the peak. He estimates that about 50,000 people are involved in growing pepper in the state.

De Conto says that the ideal weather in Para state means that it will probably remain the principle growing state in Brazil, although some is now produced in Espirito Santo and Bahia states.

One large irrigated plantation of 20,000 vines has been established in the north of Minas Gerais state. However, there are many other options open to farmers besides pepper in these other regions, whereas Para is only suitable for forestry, or palm oil production, and de Conto feels that some pepper production will survive. Because the cost of labour in Brazil is significantly higher than that in Asia however, he feels it will eventually settle down at a level of about 10,000 tonnes.

Patrick Knight in Sao Paulo

Global pepper economy in a low groove

WORLD trade data reveals that since 1990, total pepper imports globally have stagnated. The volume of world production and aggregate import/export figures for 1990-93 suggest that the pepper economy has got into a low level equilibrium with both consumption and production at floor levels, said Kamlesh Tanna, former chairman of the All India Spices Exporters Forum, at the international pepper seminar recently held in Bangkok.

The three-day seminar was organised by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in collaboration with the International Pepper Community (IPC), with the financial support of the Dutch government. Countries represented at the meeting were China, India, Indonesia, Malaysia, Federated States of Micronesia, Pakistan, Sri Lanka, Thailand and Vietnam. Both FAO and the International Trade Centre, UNCTAD/GATT sent their representatives.

The main thrust of the seminar was how to increase export earnings through quality improvement, product development and enhancement of market capabilities.

The main reasons for the situation lie in land practise, particularly in the use of marginal land and poor use of inputs which feed through into low yields, said Tanna.

Delegates at the conference stressed that if yields per unit of land are stepped up by removing farm 'weaknesses' it would ensure higher farm incomes to growers. Higher yields and production would also mean lower trade prices, which in turn would result in increased demand for existing usage. But under the present situation increasing productivity would cause more problems than it would solve.

Another strand of thought at the meeting was that traders must transfer the goods to consumers in an acceptable form in order to stimulate demand.

The seminar identified that a number of physical restraints are inhibiting pepper exports from one country to another. In the case of a country like India, there is so much internal demand for pepper that a genuine exportable surplus is not easily generated. Despite such high domestic demand, India has been in the international trade of the spice with a respectable volume. A larger production through increased yields would obviously result in the satisfaction of local demand and a sufficient surplus to meet export demand. But transportation, storage and port facilities are inadequate in the country.

In countries like India and Indonesia fiscal restraints such as export levies limit the commodity's expansion. Indonesia has a 10% duty on light pepper exports. Obtaining investment funds from local banks is also very problematic, said delegates at the seminar.

Rafu Chandran in Bombay

GROSS IMPORTS OF PEPPER (1,000 tonnes)

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total west Europe	48.6	56.0	56.5	52.4	52.8	51.0
Total east Europe & CIS	24.7	23.7	20.2	18.2	9.1	13.5
US	31.6	37.8	39.4	44.7	46.6	39.0
Canada	3.5	3.1	3.5	3.4	3.9	3.6
Japan	6.1	5.9	6.7	6.1	7.3	7.1
Total world	141.1	155.9	177.8	183.4	181.4	145.2
Re-exports						
France	2.3	5.3	2.3	1.0	0.4	1.2
Germany	1.4	1.7	2.0	1.7	1.0	1.0
Netherlands	2.1	4.4	6.3	3.8	7.2	5.0
Others	4.2	6.2	9.8	9.3	8.8	8.0
Net world exports	131.1	138.3	157.4	167.6	164.0	130.0

Source: Man Producten

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Pepper emerges from turbulent year

STABILITY has returned to the pepper market after a turbulent year, in which prices went from record lows to record highs. Black and white pepper have recently traded at prices slightly above the normal levels of the past, and the balance of the market suggests they will stay there for a while.

The largest producer is India, which dominates the black pepper market and harvests in December-February. Brazil produces black and white pepper harvested in September and October-November respectively, and Indonesia and Malaysia are also significant.

Brazilian production reached a record of 50,000 tonnes in 1991-92 at 50,000 tonnes. It came in response to high prices in the 1980s, but caused a slump in the world market, sending white and black pepper to hit rock-bottom at about $1200/tonne and $800 respectively for spot sales in Europe.

Through the early months of 1993 traders saw a recovery to normal trading prices. Muntok white pepper reached approximately $1,800/tonne, and special black pepper $1,300/tonne. Then in August-September 1993 there was a dramatic jump.

White pepper trebled as Indonesia squeezed world supplies. Abundant stocks were available, but were held for speculative purposes by trading firm Gemilang, driving up prices to $4,000. Stocks were then released and prices fell back to around $1,800-2,000. A similar act was played out with special black pepper, as prices jumped from $1,300 to $2,000.

This year the market has stabilised, but a shift in trade has occurred. India traditionally exported most of its black pepper to the former Soviet Union, largely through barter deals which took enough product to create a premium elsewhere on the market. Now this trade has dwindled and India has been forced to bring its prices to a more competitive level, although they still remain at a premium.

So far this year India has sold a fair amount of pepper. The forecast for the 1994-95 Indian crop is 50,000 tonnes, 9% below the previous year. In a good year India can produce up to 60,000 tonnes.

The current European spot price for special black pepper, origin Sarawak, is $2,050/tonne, and for white muntok it stands at $3,250. still well above average prices prior to the boom last year.

Katherine Moore

The Public Ledger September 24, 1994

Growers' cutbacks lift pepper market

BLACK pepper prices are on the move, defying previous forecasts that they were in for a period of stability. Importers have been caught out by a supply outlook which is suddenly tighter than expected, and the market has begun to rise *(Staff)*.

It has reacted strongly this week to reports from the major producing countries - Indonesia, Malaysia, and Brazil - that crops will be a lot smaller than previously expected. Importers believed that supplies would be similar to last year, but failed to realise how far the growers had cut back their efforts in response to previously poor prices.

Suddenly, it has begun to look as if consumers worldwide, in anticipation of a normal crop year, have not bought enough product to cover their requirements.

The news has led prices to climb quite rapidly this week. The European spot price for special black Sarawak pepper has risen from $2,050/tonne to $2,225/tonne. The level for Brazilian B1 pepper jumped from $2,200/tonne to $2,400/tonne.

Consumers had not calculated for a drop in production, and traders report that as the news has spread everyone has moved into the market to buy. They predict that the balance of the market for the rest of this year will see demand a little stronger than supply.

Pepper is a cyclical crop and in the past years major growing countries have been producing too much pepper to be absorbed into the market. Increased production in the 1980's came in response to higher prices.

Prices then hit rock-bottom in 1992 as a result of overproduction. These did not make it worthwhile for farmers to even pick the crops, as they were receiving next to nothing and could not afford to keep up the vines. As pepper grows in similar conditions to coffee a lot of farmers also changed crops to make more money.

The pepper vine takes five years to produce good crop and within 10-12 years it will die. It also needs constant fertilisation.

The market, is as a result, fairly cyclical and volatile. Seven to eight years ago prices were around $4,000/tonne for black Sarawak pepper and $7,000 for white muntok pepper. Prices then slumped to around $800/tonne for black pepper and $1,200 for white pepper.

The Public Ledger September 17, 1994

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Indonesia faces pepper shortage

SEVERE drought and a lack of carryover could result in a drop of 30% in availability of white pepper from Indonesia, traders said.

In an average year Indonesia will produce around 22,000- 25,000 tonnes of white pepper but the total crop last year fell to around 15,000 tonnes. This year the crop size in August/September was estimated between 14,000 tonnes and 15,000, not much below last year's. However, total availability last year came to around 20,000 tonnes due to large carryover from the 1992 crop. With very little carryover this year we could find a severe gap in the market.

Indonesia is one of the largest producers of white and black pepper together with India, Malaysia and Brazil. These countries account for about 90% of world production. The US, Germany and the former Soviet Union are the largest importers.

Pepper is a cyclical crop with the pepper vine taking about five years to produce a good crop. If the crop is not fertilised and kept in good condition the pepper vines will die. Drought conditions in Indonesia have now exasperated the situation there, affecting both white and black pepper.

These spices both come from the same plant but the method of processing and maturing the berries is different. For white pepper the more mature berries are soaked in water for several days to facilitate the removal of the outer coating. The ripened berries are then dried, cleaned and bagged.

Both the white and black pepper markets were affected by over-production in the late 1980's as high prices encouraged increased growth. Record crops were harvested in Brazil and India causing a severe price decline in 1991-92. Farmers, as a result, moved to more lucrative crops such as coffee as both commodities require similar growing conditions.

In the first few months of this year prices have been rising again, defying forecasts of stability as importers were caught out by a supply outlook which is suddenly much tighter than expected.

In Indonesia the situation for white pepper this year has been exacerbated by the lack of stocks available to make up for the drop in production. Normally producing countries will hold stocks, in lieu of local currency, to avoid inflation and currency risks, but according to the latest trade reports from Indonesia, availability could well be 30% lower. This will not only affect supplies into the world market this year, but with the continued drought in Indonesia could push production levels for the 1994-95 crop even lower.

White Muntok pepper is currently trading at around $3,700/tonne quite a rise since 1991-92 when the white pepper price was around $1,200/tonne.

The Public Ledger November 19, 1994

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Shortage of nutmeg and mace looms for traders

By Katerine Moore

Insect infestation has hit Indonesia's nutmeg and mace production, prompting trade estimates of a much smaller crop during the next year. This has prompted forecasts that export prices will begin to rise from the prevailing low levels.

Indonesia accounts for 75% of total world production of nutmeg and mace, with an annual output of 6,000-7,000t. Grenada accounts for 23%, producing 2,000-2,500t. World consumption is currently equal to production, demand is inelastic to fluctuations in prices.

According to Rotterdam-based trader Catz International, there are fears that up to 40% of the crop will be damaged, and that a shortage will develop by the end of the year.

The worst hit area is North Sulawesi, which accounts for most of the export quality nutmeg and mace. Siau Island has suffered severely with damage estimates at approximately 65%, according to trade sources, which could cause a production shortfall of 2,067t of nutmeg by the end of the year.

The south-west monsoon season brings much dry and windy weather, which will worsen the situation as it encourages insect pests to thrive.

The Indonesian authorities seem unable to cope with the situation. Local officials and farmers have taken little action to curtail the spread of the pest and further damage is expected.

As a result of the forecast shortage, local market prices have increased by about 20%. It remains at a higher level than Europe

International trade continues to produce low profit margins. Prices have been around 20% lower than levels of six or seven years ago, but they are expected to rise as supplies are tightened.

European prices for shrivels are around $1850 and for BWP around $1450. The Indonesian market is about 5% higher in anticipation of the shortage.

Grenada's crop has also been affected by bad weather. The first examination by the GCNA, the organization of Grenadan Exporters, reported the crop size at 1750t, sales at 2100t and stock levels at 1900t, short of the minimum stock target of 2250t.

The GCNA keeps an extra 2250t in stock, equivalent to one year's supply. The older stock will be used for distillation and special exports. At present the GCNA feels that the stock is far too low.

It also feels that export prices are too low. This is preventing GCNA from increasing its base prices for farmers, who are already struggling to cover their labour costs.

The GCNA and Indonesia's equivalent body, the AEPA, came together in April to discuss the possibility of increasing international market prices.

Commodity Week July 23, 1994

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Exporters make new moves in nutmeg market

GRENADA is taking aim at the US nutmeg market with the introduction of a high quality variety named 'Grenada reconditioned'. It raises the prospect of a more competitive atmosphere in a sector of the market which until now has been dominated by Indonesia, although there are also signs of the two countries cooperating in their marketing efforts.

The US is one of the largest importers of nutmeg, and has traditionally always bought a reconditioned variety - semi-processed and easier to grind than whole nutmegs - from Indonesia. Grenada has sent trial parcels of whole nutmeg to the US, where the process of reconditioning will take place.

Grenadan exporters are looking to fill a gap in the market left by the large crop reduction forecast for Indonesia.

Until the hurricane of 1955 Grenada supplied the US with most of its import requirements. As a result of devastating damage to the Grenadan crop, US importers turned to Indonesia to fill the gap, giving it the lion's share of average imports of approximately 1,900 tonnes per year.

Indonesia and Grenada are the top two producers of nutmeg and mace in the world, accounting for 75% and 25% of international trade respectively. The US and Germany are the largest importers.

The crop situation in Indonesia is still looking quite bad, with recent harvest estimates at 3,000-3,500 tonnes, around half the normal production levels of 6,000-7,000 tonnes, according to Klaas Huitma, managing director of Catz International in Rotterdam.

The trees have been affected by insects which thrive under the leaves of the trees so that they are sheltered against rain. The pests feed on the chlorophyll from the leaves turning the tops of the leaves blackish. The pests are then covered with a whitish web and during hot and windy days are swept away to start a new cycle. Drought conditions ensure that the damage becomes even heavier.

A drought hit most areas of Indonesia about three months ago, but according to an embassy official in London it has now started to rain in most regions, and this should alleviate the situation.

World prices for nutmeg have firmed as a result of the losses in Indonesia, following a trend which began in 1988-89, but they are still relatively low at 30-40% below the highs reached 6-7 years ago. The spot price for East Indonesian sound shrivels is currently $2,400/tonne and for BWPs $1,950/tonne. Prices for Grenadan nutmeg are $2,225 for GUNS and $2,375 for SUNS c&f.

Although prices are rising, trade on the international market still produces low profit margins for farmers. Nutmeg growers in Grenada have claimed they can't work as a result of the low prices, while in Indonesia the situation is slightly better as 'wages are lower and it is easier to employ', according to a trader.

This has prompted the two countries to join in discussions aimed at finding a way of pushing world prices back to what they regard as economical levels. Indonesian sources have forecast that prices will double in the few months as the extent of the crop damage is fully assessed.

The nutmeg trees in Indonesia are not dead, but the leaves have disappeared leaving the trees bare of fruit. It is too early to say what the crop will be like next year but at present there is no fruit, and it takes the young fruit nine months to mature. If the situation continues, next year's harvest could be even lower than the crop of 1994-95.

Katherine Moore

Nutmeg pact talks flounder

THE WORLD'S two major nutmeg producers have broken off negotiations on a pact to control production of the spice because of the involvement of a European marketing company.

Market sources said that the involvement of BerCatz, a marketing company which would take a 5% commission on sales under the agreement, has worried Grenadian producers and led to the breakdown in discussions on the pact.

Indonesia, and particularly the island of Sulawesi, along with Grenada account for almost all world production. Indonesia has a 75% slice of the market and Grenada 23%.

'Eventually a deal will be struck as the participants dearly want to put a ceiling on production and pull prices up to an economic level,' said a source in the Caribbean.

'The pact will go ahead - it's a little bit of posturing at the moment,' added the source.

The Grenada Co-operative Nutmeg Association has said that it is 'totally opposed to any joint marketing arrangement that gives BerCatz a percentage, simply because the company is not a producer,' said Cliff Robertson, chairman of the association.

Grenadian producers argue that they will only back a pact that involves producers as this was the only way that an increase in the price of the commodity can be engineered, said sources.

Grenada is much more dependent on nutmeg. Its production accounts for almost 40% of foreign exchange earnings. Grenada has been hit hard by low prices. Costs are higher than in Asia, particularly wages.

Nutmeg is the seed of a tree native to the Spice Islands, or the Moluccas, of Indonesia. Most Indonesian nutmeg now comes from Sulawasi. It is used in cooking and the Indian and Chinese markets are a profitable destination for the spice. In western countries it is mainly used in baking, confections, meat and sausages.

Nutmeg is sometimes added to vegetables such as spinach. In China, nutmeg is also used as a traditional medicine. The spice can cause hallucinations, mental confusion, extreme thirst and psychotic symptoms. World consumption of nutmeg is estimated at 10,000 tonnes annually. Only 10% is purchased by the consumer market, the rest going into processed foods, mostly meat. This dominant position of the large food companies has not helped prices as they have effectively driven down prices through long-term contracts. Much of the speculation has gone out of the market and this has affected liquidity. A cartel in nutmeg ran until 1987 when Indonesian nutmeg began to be smuggled out to Singapore. This combined with a period of high stocks and depressed prices. In a desperate attempt to underpin prices large amounts of the spice were burnt in 1993, but the chronic oversupply situation has remained.

Proposals are to keep world production at about 9,500 tonnes a year, only a small amount less than the estimated current world demand and 2,500 tonnes less than the combined output of both countries. This would stabilise prices and lift values to economic levels again, believe the producers.

The Public Ledger December 23, 1994

Cardamon caught in Indian plague scare

ONE of the less publicised victims of the recent plague outbreak in India was the spices trade. Imports were banned by several countries, among them the lucrative markets in the Gulf region, and estimates on the loss of sales have ranged from Rs300-400m.

However, pepper has fared better despite discouraging reports in the domestic media.

Nanda Kumar, chairman of the Spices Board, said the cardamon sector was hit particularly hard. Saudi Arabia, the biggest importer, proved to be the most stringent in its import controls, and this was enough to seriously upset the cardamon cart.

The effect was compounded by the fact that the epidemic broke out in October, usually the peak season for cardamon exports. The result was that instead of the usual Rs600m worth of foreign sales, only Rs200-300m was pulled in.

Kumar said that the Indian industry had missed the bus this time around, and that with the Guatemalan crop due on the market in January it had to make a concentrated effort to win back lost ground.

However, he denied local media reports that pepper exports to the US had been hit by the plague scare, and claimed that not a single exporter or importer had reported any problems on this account. There was no correspondence related to the issue from the US embassy either, he said.

'There has not been any shortcoming on the quality front,' said Kumar. 'Only sufficient quantities were lacking to cater for export demand.' The only problem was that some shipments to the US could have been delayed as some transhipment ports, such as Colombo in Sri Lanka, declared a quarantine on ships from India.

He also stressed that dry products, such as pepper, had been proved to be non-carriers of the germs associated with the epidemic. A message from the German Tea Council was cited as evidence of the claim.

Kumar launched an attack on the local media, which he said had promoted too much speculation on the potential trade effects of the plague. He said that reports of US firms reselling consignments which were contracted earlier or refusing to accept Indian pepper were without any foundation, and that Indian prices have remained on a par with international levels.

Raju Chandran

Commodity Week December 19, 1994

Mixed fortunes in coffee spice

Despite reports to the contrary, traders report that cardamoms are still very much in short supply. Guatemala is the world's major exporter of the spice and rumours of a projected record 13,000 tonnes harvest is not cutting ice with traders.

'If there is a big crop they are concealing it very well,' explained Klaas Huitema, managing director of Catz International in Rotterdam. He said that prices are still very firm, reflecting the constant scarcity of the commodity. 'Traders don't expect a record and we can't see it reflected in prices,' he said.

However, official statistics from Guatemala say that the Central American country exported 14m kilograms of cardamoms, worth just under $4m in 1993, according to Anna Lorena Colom, a representative of GEXPRONT, the Guatemalan non-traditional export products association. This year sendings are up, she said. Between January 4 and September 1, cardamoms worth $6.5m were exported, although weight statistics were unavailable. Given that prices are roughly unchanged for mixed, and seeds have firmed slightly since January, sendings are certainly on an upward groove. Guatemalan bold mixed green is currently trading at $12/kg and seeds at $8/kg.

Although Guatemala dominates the cardamom market, other growers include Honduras, India (where it is indigenous) and Papua New Guinea. Indian cardamom tends to be expensive and Papua New Guinea sends only small quantities of the spice. The poorer grades are used for mixed spices, used in cakes and pastries. The high qualities are mostly sent to the Middle East and mixed with the pungent coffee of the region. More than 85% of Guatemala's cardamom exports go to Arab countries and this is the premier market for cardamom.

The reason why cardamom is in such short supply at the moment is classic agricultural crop cycles. 'A few years ago you couldn't give cardamom away because there was so much of it on the market,' stressed Klaas Huitema.

This led to lower prices and farmers found that they could not make a profit growing it, and so switched to other cash crops. In Guatemala, cardamom is grown at the same altitude as coffee, and grows almost wild, with almost no cultivation and fertiliser input.

Guatemalan growers are holding their breath at the moment because of a dispute between Arab countries and Guatemala, which could endanger its most precious export market. Guatemala has moved its embassy in Israel from Tel Aviv to Jerusalem, much against the wishes of Arab nations. Whether they will retaliate and cut imports from Guatemala is the question most on the lips of growers. The reason for the move is because Guatemala has been politically close with Israel for some years.

'If Middle Eastern countries close their door to Guatemala's cardamoms, it will cause a collapse in the industry,' said a Guatemalan industry executive. The unpredictable world of the Middle East is prone either to ignore the move or make a show on principle.

Andi Sciacca

The Public Ledger September 24, 1994

India fears for coriander revenue

CORIANDER has become a useful money-spinner for exporters in India since the beginning of the decade, with an impressive rise in the value of foreign sales. As with all commodities, however, sustained success cannot be taken for granted, and there have been reversals in the trade over the past 18 months. The challenge for the industry is to ensure that it remains a successful performer in the country's spice sector.

The business really took off in 1991-92, when export values soared by 300% over the previous year to Rs130m, and it was followed by a 70% increase to Rs20m in 1992-93. The total slipped back slightly to Rs19.5m in 1993-94, but concerns have become more acute since April. In the first five months of the current financial year exports totalled Rs7.9, compared with just over Rs11m in the same period of the previous year.

Volumes have moved on a similar line, rising from 3,488 tonnes in 1990-91 to 9,954 tonnes the following year. They climbed further to 13,644 tonnes the following year, then slipped back to 12,750 tonnes in 1993-94.

Traders have attributed the reduction to falling prices, both in international and domestic markets, more than any decline in popularity. Domestic prices for the Rajasthan variety had fallen to Rs1,800-2,100/quintal in July 1994 from Rs1,900-2,300 a year earlier, while marginal declines affected the other varieties.

However, its performance is still impressive compared with 10 years ago. At that time, coriander's contribution to India's spice exports was almost negligible; but it has now obtained a 7% share, and average prices of over Rs15/kg are well above the level of Rs7.22 in 1988-89.

The biological name for coriander is *coriandrum sativum*, and it belongs to the same seed family as celery, fennel, cumin and fenugreek. Rajasthan accounts for around 55% of the national production, with other big centres in Madhya Pradesh (17.8%) and Andra Pradesh (11.6%).

Rajasthan also provides the most expensive variety, followed by the Guntakal from Andra Pradesh and deluxe from Madhya Pradesh. Total area under coriander cultivation stood at 376,200 ha last year, providing an output of 194,500 tonnes.

However, the industry faces the same demands as others in the Indian spice sector. Domestic consumption is high and sucks up most of the supplies, leaving only around 7% for export.

The potential to break out of this has been hindered by the spice's low productivity, with an average yield of over around 500kg/ha. There has been little investment so far in scientific farming methods, and the crop is very vulnerable to changes in the climate and heavy monsoons. Also, the traditional sun-drying practice makes it vulnerable to beetle attack and biological contamination, and there are sometimes problems keeping the moisture content at the optimim level of 19%.

Exporters have added that they also face very stiff competition from varieties produced in Morocco and Bulgaria, where the prices are relatively cheap and the quality is good, meeting the usual requirements on aroma, flavour, appearance and a uniformally light colour. Other producer countries are Romania and Pakistan.

However, they feel that there are opportunities in foreign markets, especially countries with a sizeable expatriate Indian population to 'kick-start' the demand. This has been especially important in opening up markets elsewhere in Asia, often through family ties between exporters and local traders.

While a lot of effort has previously been devoted to bulk packs, notably in 40kg gunny bags, there is an increasing emphasis on consumer packs, demand for which is on the rise. Indian department stores already sell large quantities in half or quarter kg bags, and some exporters are reportedly moving into this sector.

The major importers of Indian coriander are Singapore, Sri Lanka, Indonesia, Malaysia and the United Arab Emirates, although sales to the European Union defied the decline last year with a 50% increase, due largely to zero duty on seeds. The main markets in the EU are Italy and Germany.

Commodity Week November 17, 1994

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market data

In $ and per tonne unless otherwise indicated

	Settle ment/close	Previous	Futures/day Physicals/year High	Low
Indonesian/Malaysian, ex store Eam'th/T'mouth (£)				
Mar	84.00	83.00	89.00	83.00
Mar/Apr	84.00	83.00	84.00	80.00
UK produced HP 23% bulk ex Selby (£)				
Mar	unq.	-	-	-

LINSEED MEAL

PHYSICALS

	Settle ment/close	Previous	High	Low
Argentine/Uruguayan 37/38%, cif Ghent/R'dam				
Afloat	200.00	200.00	210.00	195.00
Mar	unq.	198.00	200.00	195.00
UK produced, extracted, ex mill Hull (£)				
Jan/Apr	na	129.00	129.00	129.00
UK produced, extracted chips, ex mill Hull (£)				
Jan	na	140.00	140.00	140.00

COTTON EXPELLERS

PHYSICALS

	Settle ment/close	Previous	High	Low
Chinese, 41% protein/oil, cif EMP				
Feb	99.00	99.00	99.00	99.00

COPRA MEAL

PHYSICALS

	Settle ment/close	Previous	High	Low
Philippines/Indonesia expellers				
Afloat	123.00	123.00	123.00	110.00
Feb Apr	124.00	125.00	125.00	111.00
Apr/May-Jul/Aug	124.00	124.00	125.00	108.00
Philippines/Indonesia extracted				
Afloat	113.00	108.00	113.00	104.00
Feb/Apr	115.00	114.00	117.00	108.00

CITRUS PULP PELLETS

PHYSICALS

	Settle ment/close	Previous	High	Low
US cif R'dam				
Afloat	132.00	131.00	132.00	122.00
Mar	130.00	130.00	132.00	126.00
Apr/Jun	135.00	135.00	137.00	125.00
Jul/Sep	128.00	129.00	130.00	126.00
Oct/Dec	117.00	117.00	121.00	117.00

MAIZE/CORN GLUTEN FEED

PHYSICALS

	Settle ment/close	Previous	High	Low
US pellets 23/24% cif R'dam				
Afloat	125.00	125.00	128.00	122.00
Mar	125.00	125.00	126.00	122.00
Apr	125.00	125.00	125.00	120.50
May/Aug	125.00	124.50	125.00	120.50
Sep/Dec	127.00	127.00	127.00	122.00
US pellets 23/24% ex E.Coast (£)				
Mar/May	95.00	93.00	96.00	93.00
Jun/Oct	96.00	93.50	95.00	92.50
US pellets 23/24%ex Liverpool (£)				
Mar	93.00	91.00	93.00	89.00
Apr	93.00	91.00	93.00	87.00
May/Sep	89.00	87.00	89.00	86.00

RICE BRAN

PHYSICALS

	Settle ment/close	Previous	High	Low
Indian/Pakistan, ex Avonmouth/Sharpness (£)				
Mar	unq.	-	-	-
Apr	80.00	80.00	80.00	71.00

TAPIOCA

PHYSICALS

	Settle ment/close	Previous	High	Low
Thai hard pellets, fob R'dam (DM/100kg)				
Spot fob Ghent	25.60	25.60	25.75	25.25
Mar	25.50	25.50	25.75	25.25
Apr/Jun	24.90	25.25	25.65	24.90
Jly/Dec	23.90	24.00	24.40	23.90

FISH MEAL

PHYSICALS (£)

	Settle ment/close	Previous	High	Low
UK produced 'Provmi 66' in bags, ex works Hull/Grimsby				
Mar/Apr	-	335.00	-	-
Chilean pellets/meal, 66%, cif UK				
Mar/Apr/May	310.00	305.00	305.00	275.00
Chilean pellets/meal, ex store UK				
Mar/Apr/May	340.00	330.00	330.00	300.00
Peruvian pellets/meal, 65%, cif UK				
Mar/Apr/May	300.00	295.00	295.00	265.00
Peruvian pellets/meal, ex store UK				
Mar/Apr/May	320.00	-	-	-
Danish herring meal, 72% protein, cif UK				
Mar/Apr/May	370.00	363.00	370.00	360.00
Danish herring meal, ex store UK				
	unq.	unq.	unq.	unq.
Icelandic capelin meal, 70% protein, cif UK				
Mar/Apr/May	340.00	335.00	-	-
Icelandic capelin meal, ex store UK				
Mar/Apr/May	355.00	350.00	360.00	345.00
Norwegian herring/capelin meal, cif UK				
Mar	unq.	unq.	unq.	unq.
Norwegian herring/capelin meal, ex store UK				
Mar	unq.	unq.	unq.	unq.

MEAT AND BONE MEAL

PHYSICALS

	Settle ment/close	Previous	High	Low
English/Irish 45/48% protein, 10/12% oil (subject to analysis) (£)(D/D)				
Jan	140.00	140.00	140.00	140.00
Mar	unq.	unq.	unq.	unq.

EXOTICS/MINORS

ESSENTIAL OILS

Per kg unless otherwise stated

	Settle ment/close	Previous	High	Low
Aniseed oil (star)				
Chinese spot	11.00	10.75	11.00	8.00
Chinese cif	9.00	8.80	9.00	7.30
Bay oil				
West Indies	53.00	53.00	53.00	53.00
Camphor oil				
Chinese spot	2.30	2.50	2.50	2.30
Chinese cif	1.85	1.75	1.75	1.85
Cananga oil				
Java	unav.	52.00	59.00	52.00
Cassia oil				
Chinese fwd	23.80	23.00	24.00	23.00
Cedarwood oil				
Chinese fwd	3.45	3.20	3.80	3.20
Cinnamon leaf oil				
Sri Lankan cif	14.40	13.50	14.40	11.35
Citronella oil				
Sri Lankan cif	unq.	13.50	13.50	11.10
Java nom	13.50	unq.	13.50	11.00
Chinese cif	15.00	14.80	15.00	12.00
Clove oil				
Madag. spot	n/a	n/a	-	-
Ditto cif (FF.) (Nominal)	n/a	23.00	23.00	18.00
Indonesian cif	n/a	4.10	4.10	3.60
Indonesian spot	4.75	4.70	4.75	3.50
Coumarin				
Chinese spot	12.50	12.25	12.50	10.75
Chinese cif	10.50	11.00	11.00	8.85
Eucalyptus oil				
Portug. spot	n/a	n/a	-	-
Portuguese cif	7.00	7.00	7.00	7.00
Chinese spot	4.90	4.25	4.90	4.25
Chinese cif	4.95	4.25	4.95	4.10
Geranium oil				
Chinese cif	76.00	75.00	95.00	65.00
Chinese spot	100.00	105.00	105.00	95/100
Ginger oil				
Chinese cif	26.00	25.00	40.00	25.00
Indian cif	45.00	40.00	45.00	40.00
Heliotropin				
Chinese spot	13.75	13.25	13.75	13.25
Chinese cif	15.00	12.90	15.00	12.50
Lavender spike oil				
Spot	36.00	24.00	36.00	24.00
Cif	32.00	24.00	32.00	24.00
Lemongrass oil				
Cochin spot	11.50	11.50	11.50	11.50
Cochin cif	8.80	8.90	8.90/9.0	8.80
Lemon oil				
Argentine fob	20.00	19.50	21.00	19.50
Italian cif	30.00	28.00	30.00	24.00
Lime oil (lb)				
Mexican cif	8.75	8.60	8.75	8.60
Litsea Cubeba oil				
Chinese spot	9.80	9.50	9.80	7.75
Chinese cif	9.80	9.20	9.80	7.50
Menthol				
Chinese spot	18.00	18.50	24.00	18.00
Chinese cif	17.50	18.00	24.00	17.50
Brazilian fob	35.00	35.00	35.00	35.00
Musk, Chinese				
Xylol cif	4.20/4.5	4.60	4.60	4.20/4.5
Ambrette cif	8.75/10	8.75/10	8.75/10	8.75/10
Ketone cif	15.00	10.80	15.00	9.50
Orange pera				
Brazilian spot	5.90	5.50	5.90	5.40
Brazilian cif	unq.	unq	-	-
Patchouli oil				
Indonesian spot	22.00	19.50	22.00	18.50
Indonesian cif	17.50	22.00	22.00	17.50
Peppermint oil				
Chinese spot	7.00	7.50	10.00	7.00
Chinese cif	7.00	7.15	9.50	6.95
Brazilian spot	15.50	16.00	16.00	15.50
Brazilian fob	15.50	15.50	15.50	15.50
Petitgrain oil				
Parag. fob	29.00	27.00	29.00	26.50
Parag spot	32.00	29.00	35.00	28.00
Pimento leaf oil				
Spot	44.00	40.80	44.00	40.80
Sandalwood oil				
E. Indian spot	225.00	215.00	225.00	215.00
E.Indian cif	210.00	215.00	220.00	205.00
Sassafras oil				
Chinese spot	5.50	4.80	5.50	4.50
Chinese cif	4.75	5.50	5.50	4.10
Spearmint oil, Chinese				
60% spot	8.75	n/a	8.75	8.75
60% cif	9.25	8.75	9.25	8.00
80% cif	12.75	12.90	14.00	12.00
Terpineol M.U.				
Chinese spot	unq.	unq.	-	-
Chinese cif	1.90	n/a	1.90	1.70
Vetivert oil				
Indonesian cif	75.00	85.00	100.00	75.00
Chinese cif	75.00	85.00	85.00	75.00

WAXES & GUMS

	Settle ment/close	Previous	High	Low
Candelilla				
Mexican fob	3400	3600	3600	3400
Carnauba fob Brazil port				
Fatty grey	6395	6400	6400	4410
Bleached ref.	6615	6620	6620	4850
Prime yellow	10140	9920	10600	6724
Arabic gum				
Sudanese Kordofan fob	4400	4400	4400	4400
Nigerian No.1 cleaned cif	4000	4000	4000	4000
Nigerian No.2 cleaned cif	750	750-800	750	750
Beeswax				
Tanzanian c&f	n/a	3600	3600	3600
NZ c&f	n/a	3600	3600	3600
Australian c&f	37/3600	3600	3600	3500
Shellac (£/kg)				
Orange shellac				
Cif	2.15	2.25	2.25	2.10
Spot UK	2.45	2.40	2.50	2.40
Standard 1 orange				
Cif	2.60	2.65	2.65	2.50
Spot UK	2.90	2.70	2.90	2.70
Lemon 2				
Cif	2.50	2.55	2.65	2.50
Spot UK	2.75	2.85	2.85	2.75
Lemon 1				
Cif	2.55	2.80	2.85	2.55
Spot UK	2.80	3.05	3.05	2.80
Pure button				
Cif	2.80	2.90	2.95	2.80
Spot UK	3.15	3.10	3.15	3.10

SPICES

	Settle ment/close	Previous	High	Low
Cardomoms (kg), cif				
Guatemalan bold mixed green nom	12.00	12.00	12.00	12.00
Guat. seeds	8.00	8.00	8.00	8.00
Guat. sundried	5.00	5.00	5.00	5.00
Cassia lignea				
Chinese				
Whole cif	1900.00	2000.00	2000.00	1900.00
Broken cif	1650.00	1400.00	1650.00	1400.00
No.1 cif	1800.00	1800.00	1900.00	1800.00

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Market data

In $ and per tonne unless otherwise indicated	Settlement/close	Previous	Futures/day Physicals/year High	Low
Indonesian				
KBBC cif	1540.00	1540.00	1540.00	1540.00
KA spot	2400.00	2400.00	2400.00	2400.00
VA sticks spot	2585.00	2600.00	2585.00	2585.00
VA sticks cif	2425.00	2450.00	2450.00	2350.00
Corinji a sticks	2300.00	2400.00	2450.00	2300.00
Corinji b broken	1500.00	1460.00	1600.00	1425.00
Celery seed				
Ind. ASTA cif	1250.00	1350.00	1375.00	1250.00
Caraway seed				
Dutch ex store	1825	1720	2400	1720
E.Europe	*n/a*	*n/a*	-	-
Chillies				
Tienein small spot	n/a	n/a	-	-
Malawi cif	2750.00	2100.00	2750.00	2100.00
Cinnamon bark				
Seychelles cif	1500.00	1500.00	1500.00	1500.00
Madagascar	1300.00	1300.00	1300.00	1300.00
Cloves				
Madagascar cif	800.00	750.00	825.00	750.00
Comores cif	900.00	875.00	900.00	875.00
Coriander seed				
Moroccan spot	*n/a*	*n/a*	-	-
Moroccan cif	650.00	750.00	750.00	650.00
Roman/Russ. cif	600.00	600.00	600.00	600.00
Cumin seed				
Indian	1700.00	1500.00	1700.00	1700.00
Iranian	1425.00	1475.00	1475.00	1425.00
Turkish	1800.00	1750.00	1800.00	1800.00
Fennel seed				
Chinese	n/a	n/a	-	-
Indian cif	1000.00	1025.00	1025.00	1000.00
Fenugreek seed				
Moroccan spot	n/a	n/a	-	-
Moroccan cif	*1000.00*	*1000.00*	*1000.00*	*1000.00*
Turkish spot	725.00	725.00	725.00	725.00
Turkish cif	n/a	n/a	-	-
Indian cif	625.00	640.00	700.00	625.00
Ginger				
Nigeria split spot (£)	660.00	650.00	660.00	600.00
Cochin cif	2100.00	1800.00	2100.00	1800.00
Indon. sliced cif	1100.00	1100.00	1100.00	1100.00
Chin. whole cif	1400.00	1400.00	1400.00	1400.00
Mace				
W.Ind. No.1 c&f	9600.00	n/a	9600.00	9100.00
W.Ind. No.2 c&f	*5400.00*	*5000.00*	*5400.00*	*4400.00*
W.Ind. No.3 c&f	2900.00	n/a	2900.00	2900.00
E.Indian broken No.2 cif	4800.00	4700.00	5000.00	4700.00
PNG broken No.2 cif	4100.00	4200.00	4100.00	4100.00
Nutmeg				
Grenada 80s c&f	3400.00	3400.00	3400.00	3400.00
Grenada 60/65s c&f	3600.00	3600.00	3600.00	3600.00
Grenada 110s c&f	3150.00	3150.00	3150.00	3150.00
Grenada GUNS c&f	2225.00	2212.50	2225.00	2212.50
Grenada SUNS c&f	2375.00	2362.50	2375.00	2362.50
E.Indian sound shrivels				
Spot	2100.00	2200.00	2350.00	2100.00
Shipment	2200.00	2300.00	2200.00	2200.00
E.Indian BWPs prompt cif	1900.00	1900.00	1950.00	1900.00
E.Indian ABCD cif	2300.00	2200.00	2450.00	2200.00
Pepper				
Sarawak whitefaq				
Spot	3800.00	3850.00	3850.00	3550.00
Shp Mar/Apr	3725.00	3775.00	3775.00	3725.00
Muntok whitefaq				
Spot	3775.00	3800.00	3900.00	3750.00
Shp Mar/Apr	3700.00	3725.00	3800.00	3580.00
Sarawak black special				
Spot	2550.00	2650.00	2700.00	2550.00
Shp Mar/Apr	2450.00	2475.00	2525.00	2450.00
Brazil black Grd1				
Spot	2600.00	2750.00	2750.00	2600.00
Shp Mar/Apr	2475.00	2550.00	2600.00	2475.00
Pimento				
Jamaica spot	2200.00	2200.00	2200.00	2200.00
Jamaica cif	2275.00	2300.00	2325.00	2100.00
Mexican spot	1900.00	1950.00	1900.00	1900.00
Mexican cif new crop	1900.00	2000.00	2100.00	1750.00
Poppyseed				
Euro blue cif	850.00	850.00	850.00	850.00
Ditto ex store (£)	580.00	580.00	580.00	580.00
Saffron, Spanish cif London (kg)	n/a	750/800	750/800	750/800
Sesame seed				
Guatemalan hulled 99.9% purity ex store (£p/lb)	39	39	39	39
Ditto cif Europe	1750.00	1780.00	1780.00	1325.00
Ditto ex store UK (£)	820.00	820.00	820.00	820.00
Natural cif UK	*1090.00*	*1090.00*	*1090.00*	*1090.00*
Ditto ex store UK (£)	685.00	685.00	685.00	685.00
Sunflower seed				
US hulled cif UK	1090.00	1090.00	1090.00	1090.00
Ditto ex store (£)	640.00	640.00	640.00	640.00
Turmeric				
Madras fingers spot (£)	675.00	675.00	675.00	675.00
Ditto cif	560.00	550.00	575.00	550.00

EDIBLE NUTS

In $ and per tonne unless otherwise indicated	Settlement/close	Previous	Futures/day Physicals/year High	Low
Almonds (shelled)				
US Non Pareil select cif	3800.00	3750.00	3800.00	3500.00
US Standard Shelled Run	3600.00	3400.00	3600.00	3400.00
Spain Valencias cif	n/a	3700.00	3700.00	3700.00
Spain Largentas	n/a	3700.00	3700.00	3700.00
Apricot kernels (£)				
Australian	unq.	unq.	-	-
South African	720.00	720.00	720.00	720.00
Chinese cif	850.00	850.00	850.00	850.00
Turkish cif	695.00	695.00	695.00	695.00
Brazils (lb), ex store UK				
Medium	1.48	1.47	1.52	1.47
Midgets	1.52	1.47	1.55	1.47
Cashew kernels, Indian				
Spot 320s (£)	3280.00	3400.00	3600.00	3400.00
Spot 450s (£)	n/a	3300.00	3500.00	2800.00
Large white pieces fob R'dam (lb)	1.90	1.97	1.98	1.50
320s Feb-Mar (lb)	2.35	1.98	2.40	1.54
Desiccated coconut				
Ex store fine grade (£)	700.00	690.00	700.00	690.00
Ex store medium grade (£)	700.00	700.00	700.00	700.00
Ex origin Sri Lanka fine/mediumgrade cif Europe	820.00	800.00	1000.00	800.00
Philippine Macaroon med. cif	1000/40	1020.00	1000/40	1020.00
Indon. cif Eur.	980.00	1000.00	1000.00	970.00
Ditto cif MidEast	765.00	850.00	850.00	760.00
Peanuts				
Chinese Hsu-ji 40/50 1994/95 crop fob R'dam	780.00	n/a	780.00	770.00
US 40/50 1995 Feb/Jun cif	870.00	860.00	870.00	830.00
US 38/42 '95 cif	900.00	900.00	900.00	885.00
US 60/70 '95 cif	750.00	750.00	750.00	720.00
Argentine 40/50 runners 1994/95 crop cif	770.00	n/a	770.00	770.00
Argentine 38/42 runners 1994/95crop cif	800.00	n/a	800.00	800.00
India 60/70 Java cif	720.00	700/710	720.00	670/680
Ditto Bold cif	710.00	690.00	710.00	660/670
Hazelnut kernels				
Turkish Levants Standard 1 cif	3150.00	3400.00	3400.00	3150.00
Ditto Standard 2	2500.00	3300.00	3300.00	2500.00
Faq	2500.00	3000.00	3000.00	2500.00
Pecans (lb), US kernels ex store UK	4.25	4.25	4.25	4.25
Walnuts				
Indian c&f light halves (£)	2200.00	2000.00	2400.00	2000.00
Indian c&f light broken (£)	1700.00	1650.00	1700.00	1650.00
Indian c&f light amber halves (£)	1600.00	1400.00	1600.00	1400.00
Indian c&f light amber broken (£)	1350.00	1325.00	1350.00	1300.00
Chinese cif light halves (£)	2850.00	2995.00	2995.00	2850.00
Chinese cif light quarter (£)	2625.00	2595.00	2625.00	2595.00
Chinese cif light amber halves (£)	2725.00	2750.00	2750.00	2750.00
Chinese cif light amber quarter (£)	2550.00	2375.00	2550.00	2375.00
Chinese cif light pieces (£)	2475.00	2350.00	2475.00	2350.00

CRUDE DRUGS (kg unless otherwise indicated)

	Settlement/close	Previous	Futures/day Physicals/year High	Low
Balsam (£)				
Canadian spot	32.50	32.50	32.50	32.50
Canadian cif	32.50	32.50	32.50	32.50
Peruvian spot	unq.	unq.	-	-
Peruvian cif	8.98	8.98	8.98	8.98
Copaiba spot	6.82	6.82	6.82	6.82
Copaiba cif	6.82	6.82	6.82	6.82
Tolu spot	7.83	7.83	7.83	7.83
Tolu cif	7.83	7.83	7.83	7.83
Benzoin (£)				
Leopard spot	n/a	2.86	2.86	2.86
Leopard cif	3.10	n/a	3.10	3.10
Black cohosh (£)				
Spot	n/a	5.37	5.37	5.37
Cif	5.32	n/a	5.37	5.37
Camphor (£)				
Synth. BP spot	2.42	2.42	2.42	2.42
Ditto cif	2.42	2.42	2.42	2.42
Nat'l BP spot	4.87	4.87	4.87	4.87
Natural BP cif	4.87	4.87	4.87	4.87
Cascara bark (£)				
Spot	2.45	2.45	2.45	2.45
Cif	2.45	2.45	2.45	2.45
Wild cherry bark (£)				
Spot	3.87	n/a	3.87	3.87
Cif	3.87	3.87	3.87	3.87
Cochineal				
Spot	unq.	unq.	-	-
Gentian (£)				
Root spot	5.28	5.28	5.28	5.28
Root cif	5.28	5.28	5.28	5.28
Hydrastis roots (£)				
Spot	51.27	51.27	51.27	51.27
Cif	51.27	51.27	51.27	51.27
Ipecacuanha roots, Costa Rican				
Spot	24.75	24.75	24.75	24.75
Cif	24.75	24.75	24.75	24.75
Kola nuts, West African				
Spot	unq.	unq.	-	-
Cif	unq.	unq.	-	-
Quillaia bark				
Jamaican spot	1.98	1.98	1.98	1.98
Jamaican cif	1.98	1.98	1.98	1.98
Senega				
Canadian spot	unq.	unq.	-	-
Canadian cif	unq.	unq.	-	-
Slippery elm bark powder (£)				
Spot	8.32	8.32	8.32	8.32
Cif	8.32	8.32	8.32	8.32
Styrax (£), Turkish natural				
Spot	7.85	7.85	7.85	7.85
Cif	7.85	7.85	7.85	7.85
Tonquin (£)				
Spot	6.59	6.59	6.59	6.59
Cif	6.59	6.59	6.59	6.59
Valerian, European cut				
Spot	unq.	unq.	-	-
Cif	unq.	unq.	-	-
Witch hazel leaves (£)				
Spot	5.97	5.97	5.97	5.97
Cif	n/a	5.97	5.85	5.97
Nux vomica				
Spot	unq.	unq.	-	-
Cif	unq.	unq.	-	-
Sarsparilla roots (£)				
Spot	unq.	unq.	-	-
Cif	5.22	5.22	5.22	5.22

FIBRES

WOOL

FUTURES

Sydney closing (Ause/kg)				
Apr	837.0	845.0	841.0	838.0
Jun	845.0	848.0	-	-
Aug	846.0	852.0	-	-

Volume: 6

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CHEMICAL PRICES

WEEK ENDING MAR. 3, 1995

Propylene glycol, USP tanks, f.o.b. E. ...lb.	.58	.59
Propylene glycol monomethyl ether, tanks, dlvd. E. ...lb.	.38	-
Propylene oxide tanks, f.o.b. works, frt. equald. ...lb.	.575	-
Pyrazolone red (red 38) dms., works ...lb.	13.00	15.45
Pyrethrum, purif., 20% pyrethrins dms., works ...lb.	38.00	-
Pyridine, refd., 1-deg. dms., c.l. works ...kilo	8.95	-
tanks, works ...kilo	8.35	-
Pyridoxine hydrochloride, USP 100 kilos or more, dlvd. ...kilo	80.00	-

Q

Quinacridone, maroon dms., dlvd. ...lb.	43.50	-
red dms., dlvd. ...lb.	46.00	-
violet dms., dlvd. ...lb.	31.00	36.00
Quinidine sulfate, USP 1,000-oz. dms., 2,000 oz. or more ...oz.	3.50	-
Quinine hydrochloride, NF 1,000-oz dms., 2,000 oz. or more ...oz.	2.50	-
Quinine sulfate, USP XVIII 1,000-oz. dms., 2,000 oz. or more ...oz.	2.30	-

R

Racemethionine, USP 200-800 kilos ...kilo	6.60	-
800 kilos or more ...kilo	6.50	-
Racemethionine, feed grade, 99% min. c.l. t.l. ...lb.	1.60	1.66
Rapeseed oil, over 45% erucic acid dms. ...lb.	.5375	-
tank delivery ...lb.	.4875	-
Reserpine, USP, cryst. bts. ...gram	.40	.425
Resorcinol, tech. 25 kilo bgs., t.l., works, dlvd. ...kilo	5.71	-
dms., f.o.b. works ...kilo	5.71	-
USP, powd. 50-kilo dms., f.o.b. works ...kilo	15.84	-
Rhodinol 25-lb. cans ...lb.	165.95	-
Rhodinol, 98% a + b citronellol, synthetic dms. ...lb.	14.00	-
Riboflavin, feed grade 25-kilos, dlvd. ...kilo	64.00	-
USP 25 kilos, dlvd. ...kilo	71.00	-
5-phosphate-sodium 25-kilo lots, dlvd. ...kilo	165.00	-
Rice bran oil, refined dms., t.l. ...lb.	1.20	1.25
Rose oil, nat., NF, Bulgarian otto, bots. ...kilo	5080.00	-
Turkish otto, bots. ...kilo	2640.00	-
Rosemary oil, NF, Spanish dms. ...lb.	9.00	10.00
Tunisian dms. ...lb.	9.50	-
Rotenone resin, 30-40% 100-lb. dms., works ...unit-lb.	.51	.55

S

Saccharin FCC, gran., soluble less than 1,000 lbs., works lb.	2.85	-
powd., soluble less than 1,000 lbs., works ...lb.	3.50	-
Safflower oil, non-break tanks, N.Y. ...lb.	.56	-
edible dms., N.Y. ...lb.	.82	.90
Sage oil, clary, French bots. ...lb.	80.00	88.00
American ons. ...lb.	42.00	-
clary Russian ons. ...lb.	36.00	-
Salicylaldehyde tl., f.o.b. plant ...lb.	5.00	-
Salicylamide, USP, cryst or powd. dms., 5,000-lb. lots, one ship ...kilo.	8.00	-
Salicylic acid, tech. dms., c.l., t.l., f.o.b works ...lb.	1.00	1.41
USP, cryst. dms., 1,000 lbs. or more ...lb.	1.33	1.93
USP, powd. dms., 1,000 lbs. or more ...lb.	3.92	-
Salt, evaporated, common 80-lb., bgs., c.l., t.l., North, works ...80-lbs.	4.02	-
bulk, North, works ...ton	60.00	61.20
chemical grade 80-lb. bgs., c.l., t.l., North, works ...80 lbs	4.30	-
Salt, rock, medium, coarse 80-lb. bgs., c.l., t.l., North, works ...80 lbs.	2.70	-
bulk, North, works ...ton	18.00	25.00
Sandalwood oil, E. Indian ...lb.	130.00	-
Indonesian ...lb.	85.00	-
Sarcosine, sodium salt, 40% soln. tanks, f.o.b. works ...lb.	.70	-
Schaeffer's salt, paste dms., 100% basis works ...lb.	2.50	-
Scopolamine, hydrobromide, USP 100-oz. lots bots. ...oz.	38.00	46.50
Sebacic acid, CP bgs., c.l., works lb.	2.05	-
purif. bgs., c.l., works ...lb.	2.04	-
Sesame oil, USP dms., t.c.l. ...lb.	1.04	1.12
Silicon tetrachloride, tech. dms., c.l., works ...lb.	2.45	-
tanks, works ...lb.	1.45	-
Silver bullion ingots, ea. ...Troy oz.	5.385	-
Silver cyanide, 80% Ag 800-oz. lots ...oz.	4.795	-
Silver nitrate, ACS, 58.2 Troy oz. Ag/100 avoir. oz. $AgNO_3$ ...oz.	2.95	-
Soda ash, dense, 58% Na_2O 100-lb. paper bgs. c.l., works, f.o.b. ...ton	146.00	-
bulk, works, f.o.b. ...ton	98.00	-
light, 58% Na_2O 100-lb. paper bgs., c.l., works, f.o.b. ...ton	151.00	-
light, 58% Na_2O bulk, works, f.o.b. ...ton	103.00	-
Soda, caustic, liq., 50% sellers tanks, Gulf Coast works, f.o.b., frt. equald., 76% Na_2O ...ton	300.00	330.00
liq., 73% sellers tanks, Gulf Coast works, f.o.b., frt. equald. ...ton	350.00	375.00
beads, 76% 400-lb. dms., c.l., works ...100 lbs.	31.00	-

Prices for liquid rayon-type, $25-$30 per ton higher.

Sodium acetate, anhyd. 100-lb. dms., c.l., works ...lb.	.62	-
USP, 60%, gran. 100-lb. dms., c.l., works ...lb.	.61	.62
Sodium alginate, NF, white powd., dom. 300 lbs. or more ...lb.	6.00	6.75
Sodium antimonate bgs., c.l., dlvd. E. ...lb.	1.40	1.50
Sodium ascorbate, USP dms., 400 kilos ...kilo	12.75	14.75
Sodium benzoate, tech. bgs., c.l., t.l., frt. dlvd. ...lb.	.606	-
USP 50-lb. bgs., c.l., t.l., frt. alld. lb.	.595	-
USP 100-lb. dms., c.l., t.l., frt. alld. ...lb.	.595	-
Sodium bicarbonate, USP, powd., reg. grade bgs., c.l., t.l., works, frt. equald. ...100 lbs.	20.80	-
coarse bgs., c.l., t.l., works, frt. equald. ...100 lbs.	21.80	-
fine bgs., c.l., t.l., works, frt. equald. ...100 lbs.	20.95	-
gran. bgs., c.l., t.l., works, frt. equald. ...100 lbs.	21.80	-
gran., fine bgs., c.l., t.l., works, frt. equald. ...100 lbs.	21.35	-
Sodium bichromate, crystal bgs., c.l., t.l., works, frt. equald. ...lb.	.50	-
liquid bulk, t.c., t.l., f.o.b. plant ...lb.	.35	-
Sodium bifluoride 400-lb. dms., c.l., frt. equald. ...lb.	1.02	-
100-lb. bgs., c.l., frt. equald. ...lb.	1.00	-
Sodium bisulfate bulk, c.l., t.l., works ...ton	245.00	-
400-lb. dms., c.l., t.l., works ... 100 lbs.	17.25	-
2,000-lb. bulk bags, t.l., works 100 lbs.	16.50	-
Sodium bisulfite, anhyd. bgs., c.l., t.l., works, East .100 lbs.	28.50	31.50
soln., 40% bulk, 100% basis, works, East ...100 lbs.	24.00	-
soln., 38% bulk, 100% basis, works, East ...100 lbs.	24.00	-
photographic grade, 43% soln., works ...100 lbs.	30.00	-
Sodium borate NF, gran. bgs., c.l., works ...lb.	.52	-
powd. bgs., c.l., works ...lb.	.52	-
Sodium borohydride, powd. dms, 1,000-5,000 lbs., works ...lb.	23.25	-
Sodium borohydride, stabilized water soln., 12% $NaBH_4$, 100% 3,000 gal. tankwagon, works ...lb.	19.10	-
Sodium bromide bgs., t.l., works lb.	.70	-
Sodium carbonate, hydrated bgs., c.l., t.l., works ...ton	310.00	-
monohydrate bgs., c.l., t.l., works ...ton	262.00	-
Sodium chlorate, crystal bulk, t.c., t.l., dlvd., N.E. ...ton	395.00	-
bulk, t.c., t.l., Canada ...ton	540.00	-
450-lb. dms., c.l., works, E. ...lb.	.27	-
Sodium chloride, USP, gran. bgs. lb.	.29	-
Sodium chlorite, tech. dms., c.l., t.l., works ...lb.	1.33	-
Sodium chromate, anhyd. dms., c.l., t.l., works ...lb.	.70	-
tetrahydrate bgs. c.l., t.l., works lb.	.67	-
Sodium citrate, USP, gran., dihydrate 100-lb. bgs., t.l., dlvd. ...lb.	.84	-
Sodium cyanate dms., 1,000-lb. lots, works ...lb.	.79	-
Sodium cyanide, briquettes or gran., 99% min. 2,00-lb dms., min., dlvd. ...lb.	.65	-
Sodium diacetate, anhyd. dms., c.l., f.o.b. works ...lb.	.61	-
FCC 50-lb. bgs., t.l., dlvd. E. of Rockies ...lb.	.61	.67
tech. 50-lb. dms., c.l., works ...lb.	.56	.61
Sodium erythorbate, powd., gran. t.l. or mixed t.l., f.o.b. distrl. pt. ...lb.	3.50	3.83

Prices W. of Denver 2.c per lb. higher.

Sodium ferrocyanide bgs. t.l., works ...lb.	.70	-
Sodium fluoborate, tech., gran. dms., t.l., works, frt. equald. ...lb.	1.77	-
Sodium fluoride, white, 97% 50 lb., 100-lb. bgs. dms., c.l. f.o.b. Tampa ...lb.	.60	-
50 lb., 100-lb. bgs., c.l. f.o.b. El Paso ...lb.	.63	-
Sodium fluosilicate bgs., c.l., t.l., works, frt. equald. ...lb.	.2325	.2675
Sodium gluconate, tech. 50-lb. bgs., t.l., frt. alld. ...lb.	.65	.67
Sodium hydride, oil dispersion, 60% NaH 230-lb. dms., works ...lb.	6.15	-
Sodium hydrosulfite dms., c.l., t.l., shipping point ...lb.	.62	.71
Sodium hydroxide, USP, pellets 100-lb. dms., c.l., t.l., works, frt. equald. lb.	1.13	1.22
Sodium hypophosphite, monohydrate 400-lb. dms., f.o.b. works ...lb.	1.55	1.65
Sodium iodide, USP 5,000-lb. lots, dms., frt. equald. ...lb.	16.50	-
Sodium lauryl sulfate, 30% t.l., dms., f.o.b. works ...lb.	.5725	-
Sodium lignin sulfonate bgs., c.l., works ...ton	322.00	-
Sodium metaborate, octahydrate, gran. bgs., c.l., works lb.	.49	-
tetrahydrate, gran. bgs., c.l., works ...lb.	.84	-
Sodium metallic, 12-lb. bricks dms., c.l., works ...lb.	1.40	-
fused dms., 24,000-lb. lots or more, works ...lb.	1.41	-
fused tanks, works ...lb.	1.15	-
Sodium metaphosphate, tech. bgs., c.l., f.o.b. shipping point, frt. equald. ...100 lbs.	61.50	-
food grade bgs., c.l., f.o.b., frt. equald. ...100 lbs.	68.25	-
Sodium metasilicate, anhyd. bgs., c.l., works ...100 lbs.	34.85	-
bulk, c.l., works ...100 lbs.	34.10	-
pentahydrate bgs., c.l., f.o.b. shipping point ...100 lbs.	22.50	-
pentahydrate bulk, c.l., works ...100 lbs.	21.70	-
Sodium molybdate, dihydrate dms., f.o.b. works, 200 lbs. and over ...lb.	4.60	-
dms., t.l., f.o.b. works, 200 lbs. and over ...lb.	4.60	-
liquid, 28% solution 600 lbs. and over, f.o.b. works ...lb.	1.50	-
Sodium nitrate, USP bgs., c.l., f.o.b., frt. equald. ...100 lbs.	34.50	37.25
Imp., coml. 100-lb. bgs., c.l., Atl. or Gulf whse. ...ton	214.00	-
Imp., coml. bulk, c.l., Atl. or Gulf whse. ...ton	192.00	-
Imp., agricultural bulk, c.l., Atl. or Gulf whse. ...ton	140.00	-
Sodium orthosilicate, tech. anhyd. bgs., c.l., works ...100 lbs.	40.50	-
tech., hydrated, flake dms., c.l., works ...100 lbs.	27.45	-
tech., hydrated, flake bgs., c.l., works ...100 lbs.	28.25	-
Sodium perborate, tetrahydrate, tech. bgs., c.l., t.l., works ...lb.	.365	.395
Sodium persulfate 225-lb. dms., 24,000 lbs. or more, f.o.b. plant ...lb.	.92	-
55-lb. bgs., 24,000 lbs. or more, f.o.b. plant ...lb.	.89	-
Sodium phenolsulfonate, powd. dms. ...kilo	2.94	-
Sodium phosphate, anhyd., dibasic, tech. bgs., c.l., t.l., works, frt. equald. ...100 lbs.	71.75	-
anhyd., dibasic, food grade bgs., c.l., t.l., works, frt. equald. ...100 lbs.	76.25	-
monobasic, tech. bgs., c.l., t.l., works, frt. equald. ...100 lbs.	75.50	-
monobasic, food grade bgs. c.l., t.l., works, frt. equald. .100 lbs.	78.00	-
tribasic, tech. bgs., c.l., t.l., works, frt. equald. ...100 lbs.	72.25	-
dibasic, food grade bgs, c.l., t.l., works, frt. equald. ...100 lbs.	65.65	-
dibasic, chlorinated bgs, c.l., t.l., works, frt. equald. ...100 lbs.	46.50	-
dibasic, cryst., tech bgs, c.l., t.l., works, frt. equald. ...100 lbs.	25.50	-
tribasic, cryst., food grade bgs, c.l., t.l., works, frt. equald. ...100 lbs.	38.10	-
Sodium picramate, tech., paste 200-lb. dms., dry basis, dlvd. ...lb.	5.50	-
Sodium propionate dms., 10,000 lbs or less, f.o.b., frt. alld. lb.	.59	-

Sodium pyrophosphate, acid, tech. bgs., c.l., works, frt. equald. ...100 lbs.	65.
acid, food grade, non-leavening bgs., c.l., works, frt. equald. ...100 lbs.	61
tetrabasic, anhyd., tech. bgs., c.l., t.l., works, frt. equald. .100 lbs.	56
tetrabasic, anhyd., tech. bulk, hopper cars, works, frt. equald. ...100 lbs.	52
tetrabasic, anhyd., food grade bgs., c.l., t.l., works, frt. equald. ...100 lbs.	64.
Sodium salicylate, USP, cryst. 100-lb. dms., 1,000-lb. lots or more, f.o.b warehouse ...lb.	3.
powd. 300-lb. dms., 1,000-lb. lots or more, works, frt. equald. ...lb.	3.
Sodium sesquicarbonate bulk, c.l., t.l., works ...ton	170
bgs., c.l., t.l., works ...100 lbs.	196
Sodium silicate, solid or glass, 3.22-3.25 ratio bulk, c.l., t.l., works ...100 lbs.	22.
solid or glass, 1.95-2.00 ratio bulk, c.l., t.l., works ...100 lbs.	29
41 deg. soln. 3.22-3.25 ratio bulk, c.l., t.l. frt. equald. ...100 lbs	8.

"Ratio": Pct. by weight SiO_2 divided by pc Na_2O

Sodium silicofluoride bgs., c.l., t.l., works, frt. equald. ...lb.	.2
Sodium stannate whs. ...lb.	4.
Sodium sulfanilate, dry powder dms., f.o.b. works ...lb.	1.
Sodium sulfate, East bulk, c.l., works, frt. equald. ...ton	113
Gulf bulk, c.l., works, frt. equald. ...ton	110
West bulk, c.l., works, frt. equald. ...ton	127
saltcake, E. bulk, c.l., works, frt. equald. ...ton	72.
Sodium sulfhydrate, flake, 70-72%, as is basis dms., c.l., frt. equald. ...ton	838
bgs., c.l., frt. equald. ...ton	725
liq., 44-46%, 100% basis tanks, frt. equald. ...ton	515
Sodium sulfide, flake dms., c.l., works, E. frt. equald. ...ton	725
bgs., c.l., works, E. frt. equald. ton	646
Sodium sulfite, anhyd., tech. 95-100% bgs., f.o.b. works ...100 lbs.	28.
Sodium tetrasulfide, liq., 34%, as is basis dms., t.l., frt. equald. ...ton	800
Sodium thiocyanate, tech., cryst. bgs., works ...lb.	1.2
tech., soln., 50%, tanks, works lb.	1.1
Sodium thiosulfate, tech. photo-grade, anhyd. 100-lb. bgs., c.l., t.l., works, frt. equald. ...100 lbs.	57.
tech., pentahydrate c.l., t.l., works, frt. equald. ...100 lbs.	34.
Sodium tripolyphosphate, tech. bgs., c.l., t.l., works, frt. equald. ...100 lbs.	42.
bulk, hopper cars, works, frt. equald. ...100 lbs.	38.
food grade bgs., c.l., t.l., works, frt. equald. ...100 lbs.	52.
Sodium tungstate, tech., high moly. dms., 10,000 lbs. or more, frt. alld. ...lb.	5.
Folin dms., 10,000 lbs. or more, frt. equald. ...lb.	6.
Sodium-ammonium phosphate, purif., cryst. dms., works lb.	.5
Sodium-formaldehyde sulfoxylate dms., t.l., f.o.b. works lb.	1.
Solvent naphtha, petroleum, straight aromatic, b.r. 320-350 deg. F 55 deg. F m.a.p., tanks, New Jersey ...gal.	1.
55 deg. F m.a.p., tanks, Houston ...gal.	1.
55 deg. F m.a.p., tanks, Illinois ...gal.	1.
b.r. 350-410 deg. F 60 deg. F m.a.p., tanks, New Jersey ...gal.	1.
b.r. 380 deg. F 60 deg. F m.a.p., tank, Houston ...gal.	1.
b.r. 380 deg. F 60 deg. F m.a.p., tanks, Illinois ...gal.	1.
Sorbic acid t.l., 100-lb. dms, dlvd. lb.	3.
Sorbitan monostearate dms., c.l., t.l., 30,000-lb. min., f.o.b. works ...lb.	1.
Sorbitan tristearate c.l., t.l., 30,000-lb. min., f.o.b. works ...lb.	1.
Sorbitol, USP, reg., 70% aqueous dms., c.l., f.o.b. shipping point ...lb.	.3
reg., 70% aqueous tanks, f.o.b. shipping point ...lb.	.3
gran. dms., c.l., t.l., works ...lb.	.7
reg., powd. dms., c.l., t.l., works lb.	.7
Spearmint oil, Chinese, 60% ...lb.	4.
Chinese, 80% ...lb.	6.
Far West, native ...lb.	14
Far West, Scotch ...lb.	19

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Spices World

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of new hybrid varieties. These bear large nuts in a short space of time which have high oil contents and copra which is easy to dry. In addition they do not attain great heights. In effect they have given planters high-yielding trees which are easy to harvest from.

Embryo culture

Coconut breeders have perfected a method of growing embryos in *in vitro* conditions. This method has provoked considerable interest in the Philippines where there is a very high demand for Macapuno nuts, which are regarded as a delicacy. Generally speaking, only a very small number of nuts on a single palm are of this type and because they do not germinate in the normal way there is no easy and practical way of ensuring the planted palms produce as high a proportion of these highly prized nuts. Some scientists in the Philippines overcame this problem by removing the embryos from Macapuno nuts and growing them successfully into plantable plants under *in vitro* conditions. Thus DE Guzman was able to produce plants that eventually bore a much higher proportion of Macapuno nuts. Although this method has made great strides, big losses tend to occur between removal from the laboratory and establishment in the field. This may well be overcome by using a more reliable method of culture called the calloid method which has been developed at Wye College in the UK. Inflorescence tissue from the coconut is used to produce a callus which is cultured on a medium containing 2,4-D to produce embryoids which in turn are developed into plantlets, all of which are clones of the variety from which the original calloid was generated.

Micropropagation

Micropropagation looks set to provide the vehicle for the rapid propagation of disease-free planting stock by vegetative reproduction. This is a tissue culture method using vegetative material from commercial varieties to produce clonal plantlets. It offers tremendous potential for the cost-effective improvement of planting programmes, and it will also assist plant breeders by speeding up the breeding programme as well as being employed in the selection and mass multiplication of disease-resistant varieties that could be cheaply transported to other parts of the world. □

References:
Green, A.H. (1991). Coconut production. World Bank Technical Paper Number 136.
Kochhar, S.L. (1981). Tropical Crops. Macmillan.
Purseglove, J.W. (1972). Tropical Crops. Monocotyledons. Longman.

Neem update

A new publication from the International Rice Research Institute* looks at the potential and limitations of neem pesticides in rice.

Many national and international organisations and farmer groups are re-evaluating the need for continued heavy use of insecticides and are promoting integrated pest management (IPM). IPM can provide enormous benefits to rice farmers. For example, in Bangladesh, farmers practising IPM achieved 13.5 per cent higher rice yields and reduced pesticide expenditure by 75 per cent (Kenmore 1991); Indonesia has saved US$100-150 million per year in foreign currency by eliminating pesticide subsidies and promoting IPM in rice as an alternative.

In recent years, scientific research organisations and chemical companies have become increasingly interested in using product derived from the neem tree *Azadirachta indica* for controlling rice pests. Neem has been used for pest control since ancient times. Recent scientific and commercial interest in neem has evolved in response to the need to find alternatives to costly and hazardous synthetic pesticides.

Neem is a member of the mahogany family (Meliaceae). Today, the tree grows in Asia, Africa, the Americas, Australia, and other areas with tropical or sub-tropical climate. In recent years, neem has attracted interest because of its pesticidal products, its fuelwood and shade value, and as a component of reforestation. The fast-growing plant may reach a height of 25 m. The oval fruits (1.4-2.4 cm long) are produced in drooping chemicals usually once and sometimes twice a year. They are the principal source for pesticidal chemicals, but the leaves are also commonly used for these chemicals.

An age-old practice in India is to mix neem leaves with stored rice grains or to crush them on storage facility walls to prevent insect damage. Farmers have traditionally ground leaves, soaked them overnight in water, and treated the planted rice crop with the extract.

Worldwide, rice now accounts for more pesticides than any other crop. More than 90 per cent of chemical pesticides for rice are applied to Asian riceland.

Neem products have been used to control a wide range of insect pests and plant disease organisms. Traditional methods mostly used whole plants or plant parts with minimal modification. Many of these traditional methods are still used in some areas. Mod-

Formulations and techniques for preparing neem pesticides

Formulation or technique	Effectiveness
Low volume sprays	3% neem oil and 5% neem seed kernel extract effectively controlled white stem borer *Scirpophaga innotata* in Indonesia
Ultralow volume sprays	Ultralow volume application of 50% neem oil: custard apple *Annona squamosa* oil mixture (4:1) significantly reduced green leafhopper *Nephotettix virescens* populations and whiteheads caused by yellow stem borer *Scirpohaga incertulas*; no effect on brown planthopper
Electrodyn	Electrodyn formulation of neem oil applied against Malayan black bug *Scotinophara coarctata* infestation in farmer's fields reduced the pest population significantly and increased yield
Powders	2.5 parts of powdered neem kernels to 100 parts of cowpea *Vigna unguiculata* seeds in storage effective against common stored product insects for 8-12 months
Seedling root dips	Rice seedlings root-dipped in 5 per cent neem seed kernel extract for 12 hours reduced egg laying and hatching of green leafhopper *Nephotettix virescens*
Neem cake soil amendment	Neem cake applied at 1,800 kg/ha highly effective in controlling root-knot nematode *Meloidogyne javanica* that attacks okra *Abelmoschus esculentus* and tomato *Lycopersicon esculentum*

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ern methods for using neem products include the application of low-volume or ULV sprays; powders; seed and seedling treatments; and soil amendments.

Azadirachtin is considered the most active pesticidal compound of neem. All parts of the neem tree contain azadirachtin, but is more concentrated in the seed. The content of the azadirachtin per neem tree varies greatly between locations, and other factors may also contribute to variability.

Neem's pesticidal action is not understood for all pests. The compound azadirachtin may work as an insect growth regulator interfering with ecdysone (the key insect molting hormone), which prevents immature insects from molting. Neem products may also repel insects, stop their feeding, inhibit reproduction, and cause other interruptions.

One constraint to the use of neem is its slow-killing (knock down) effect on some insect pests compared with most synthetic insecticides. The speed of action varies according to the insect pest species, its life stage, and environmental factors (temperature, etc).

Crop sprays

The traditional way to prepare neem spray is by soaking chopped or ground leaves in water for several hours and then straining off the residues. The water-neem extract mixture is sprayed on crops. Sprays are also made from crushed neem seeds or seed kernels that have been soaked in water.

A more modern method is to use oil sprays. Neem seed oil is prepared by drying, decorticating, and grinding seeds, then steaming or mixing with boiling water. The oil that separates out is sprayed on crops.

Soil amendments

In India, many farmers routinely incorporate neem cake into the soil of their rice fields. Reportedly, the soil amendment has value as a fertilizer and as a systemic pesticide. The cake, which is the fruit-seed residue after neem oil is extracted, is incorporated into the soil as basal fertilizer. The soil treatment protects young rice from insect pests, especially green leafhoppers *Nephotettix* spp., and the tungro virus that they transmit, and suppresses sheath rot fungus *Sarocladium oryzae*, and kills or repels soil-infesting nematodes, such as *Ditylenchus angustus*.

Post-harvest protectants

Neem derivatives are often used to protect harvested grains kept in bags and stores in India. Successful control of a range of stored grain insect pest species has been reported. In warehouses, 1-2 per cent powdered neem seed kernel mixed with harvested rice significantly reduced pest infestations. Mixing neem leaves with harvested rice, treating storage bags with 2 per cent neem extract, or putting dried neem leaves (20-30 cm thick) between the bags and storage floor achieved similar results.

Inconsistency of field applications

Field evaluations of neem oil applied to rice provide conflicting results. For example, the oil was not effective against brown planthopper and whitebacked planthopper in Hangzhou, China; green leafhopper *N. virescens* in Thailand ; or tungro in Nueva Ecija, Philippines. However, workers in other areas of China, the Philippines and India reported satisfactory results with neem oil applications to rice.

Neem products, especially oil formulations, may be toxic to rice. This can be a serious limitation and must be examined carefully before neem products are recommended to farmers.

Effects on natural enemies

Studies on neem's impact on natural enemies (i.e. beneficial predators and parasitoids that attack pests) have documented effects ranging from harmless to adverse. Reports of adverse effects on natural enemies have included reduced emergence of adult parasitoids from neem-treated parasitoid cocoons, e.g. braconid wasp *Cotesia plutellae*; direct mortality, e.g. green mirid bug *Cyrtorhinus lividipennis*; repellency, e.g. coccinellid beetle *Delphastus pusillus*; and reduced fecundity, e.g. bethylid wasp *Goniozus triangulifer*. Although neem adversely affected some natural enemies, its impact was short-lasting. For example, the coccinellid predator *D. pusillus* avoided the eggs of its treated prey (whitefly *Bemisia tabaci*) for one day, then resumed feeding the next day. Neem had a longer lasting impact on other natural enemies, for example, the larval parasitoid *G. triangulifer* of the rice leaffolder *Marasmia patnalis* when emergence of adult parasitoids from neem-treated pupae and fecundity of the emerging adults were lowered.

Effects on humans

For centuries neem products have been used for health applications such as antiviral and antifungal treatments and dental hygiene.

However, neem oil reportedly caused the death of children in India when used to cure minor ailments. These poisonings apparently occurred because the neem seeds from which the oil was extracted had been contaminated with aflatoxin-producing strains of the fungus *Aspergillus flavus*. When extracted from clean and fungus-free seed kernels, neem oil did not cause any oral toxicity in laboratory rats even at 5,000 mg/kg body weight. Neem products appear to present few hazards to humans if free of contaminants and used properly.

Neem and IPM

In many parts of Asia, integrated pest management (IPM) has been introduced into rice previously treated heavily with insecticides. In Indonesia, IPM specialists and trainers have trained about 3,000 extension workers and 150,000 farmers in IPM. In some districts, 60-70 per cent of the farmers who underwent IPM training have, in turn, trained other farmers. At least 300,000 farmers nationwide were trained by other farmers.

The IPM programme was started in Indonesia in 1986 under a presidential decree banning the use of 57 trade formulations of insecticide. Farmers trained in IPM have substantially reduced the use of insecticides and costs for pest control and yields have not decreased. In many farms, yields have actually increased. Nationwide, insecticide use has dropped by about half since the programme started, saving the government about US$120 m annually in insecticide subsidies to farmers.

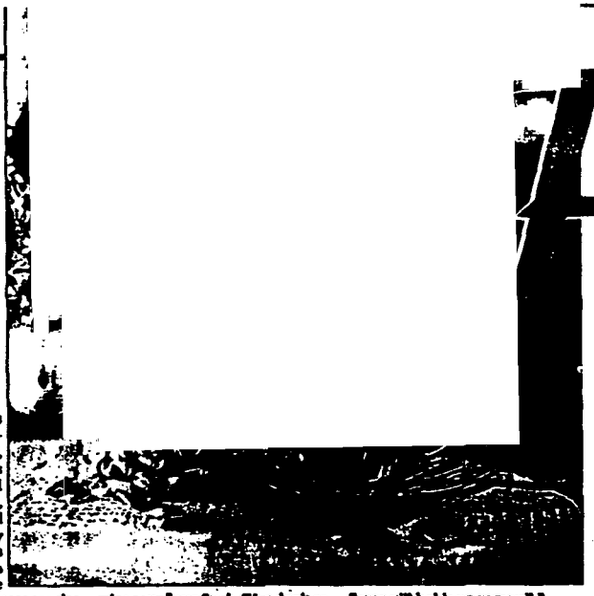
In 1991, the IRRI-ADB botanical pest control project took steps to assess the value of neem in IPM systems on farmers' fields. Project collaborators agreed to conduct trials to compare neem use with synthetic insecticides in IPM. These treatments were compared to farmers' practice of treating rice prophylactically with insecticides. Trials were conducted in large replicated plots on farmers' fields in several countries. In Tamil Nadu, India, for example, results of IPM treatments using neem showed that major insect pests did not exceed the economic injury level at 53 days after transplanting and required one application of neem or synthetic insecticide. By comparison, the farmers' practice using no IPM included three applications of insecticide. Results from IPM trials that used neem in farmers' fields were similar at four different locations in Tamil Nadu. On average rice yield was 20.5 per cent more and income was US$119.77/ha more under IPM treatments using only slightly less under IPM treatment using neem than under IPM treatment using synthetic insecticides. □

* *Neem Pesticides in Rice: Potential and Limitations*, by Lim Guan Soon and Dale G. Bottrell, is available from IRRI, PO Box 933, 1099 Manila, Philippines. Fax: +63 2 818 2087.

GROW YOUR OWN

Herbal teas

These easy-to-grow plants will provide you with the makings of tasty and elegant teas.



Herbal teas are low-calorie, natural, delicious and good for you, says Mo Siegel, president of Celestial Seasonings, a company that sold a billion cups worth of the stuff to Americans last year. The herbs that go into those teas are also some of the easiest plants you can grow—undemanding, vigorous and ignored by pests and disease.

Take mint for instance. Perhaps the most popular herbal tea ingredients, mints are bushy, square-stemmed plants. Some have furry, hairy leaves; some have smooth, serrated leaves; some stop at a foot high; and some grow to 3 feet tall. But *all* have full-bodied, sharp, refreshing flavors and aromas.

"We like the strong flavor of peppermint in tea," says Peter Stark, who with his wife, Kristina, operates Renaissance Acres, a certified organic herb farm in Whitmore Lake, Mich. Peppermint tea has a reputation as a tummy soother, but don't wait for distress—brew some just to enjoy its refreshing taste.

Maybe you'd like to be daringly different and try *chocolate* peppermint—one of the many kinds of peppermint you can grow. "It has a definite hint of chocolate peppermint patty," says Stark. "You don't really taste any chocolate, but you *do* smell it."

Spearmint is milder than peppermint, but its flavor is just as distinctive—and it makes for a very pleasant and soothing tea. Spearmint leaves are pointed, smooth and hairless, and the plants grow to just a little over a foot tall.

KENTUCKY COLONEL spearmint has the reputation of being *the* proper variety for mint julep making on Derby Day in Kentucky. "Its leaves are a little more crinkly than other spearmints," notes Kate Jayne, proprietor of Sandy Mush Herb Nursery in Leicester, N.C.

On the fruity side of the mint family, apple mint has a soft, ripe apple, slightly spearmint flavor. Its leaves are heftier than other mints, so "it only takes a couple to make a cup of tea," says Carol Peterson, both an herbalist and the author of *Herbs You Can Master* (Mountain Garden Publishing, 1994), "and the flavor still holds up very well."

Pineapple mint has an unmistakable pineapple flavor and smell. "It has fuzzy green and white leaves and grows almost 2 feet tall," says Peterson. Orange mint (sometimes called bergamot mint) has a strong citrus fragrance and flavor that is "*definitely* orange rather than lemon or lime," explains Peterson. "It's probably one of the most aromatic of the mints," she adds. "When you rub the leaves, their fragrance stays on your skin."

There are *many* other kinds of mints you might want to grow in your tea garden; just don't expect to grow *any* of them from seed. The peppermints (*Mentha piperita*) are all sterile hybrids—they rarely (if ever) produce viable seeds. And the other species in this unruly genus (*Mentha*) readily cross-pollinate, so there's no telling what you'll get when you sow the seeds of a mint. As Carol Peterson says in her book, "Profusion, infusion and confusion characterize the mint species..."

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Even botanists and herb nurseries often disagree on the correct names for some mints. "Don't worry about that," assures Peter Stark. "What's important is whether the mint is really flavorful and whether you like it. If it is and you do, who cares what it's called?" So go on out and taste some mints: Visit an herb farm, a friend's garden or an herbal tea room, decide what kind of mint you like, and then start growing it by purchasing a plant, planting a root division or taking a cutting.

Mints don't care when you plant them. "You can plant mint in spring or early fall," says Stark. "Spring is a good time because you will get to harvest some leaves later that year. Fall is also good, because there's usually more moisture then, so the plant will take hold really well, and by the following spring it will be jumping out of the ground."

Although mints like well-drained soil, they also like lots of water. "We planted our spearmint under the eaves of the barn, where it gets 10 times as much water as our other herbs because of all the runoff," says Pam Woodroffe (yes, that is her real name, she swears), an herb grower in Washington state. "Our climate here in the western part of the state is very rainy, and that makes our mints very happy."

MAKING MINTS BEHAVE

Mint is *so* easy to grow and *so* eager to grow anywhere that you might want to grow yours in a container instead of in the ground to prevent it from taking over your garden. "Mint will just move right in and push everything else out," warns Bertha Reppert, owner of The Rosemary House and Gardens, a complex that includes shops, herb gardens and a tea room in Mechanicsburg, Pa., not far from historic Gettysburg.

The mints at the Rosemary House have no choice but to be well behaved; they are planted in half barrels set on top of the ground. "We contain our mints because it is very difficult to control them in a garden, especially if the soil is nice and rich," explains Reppert. "The mints *do* outgrow their containers every two or three years, so we just clean everything out and start over with a single new plant in the center of each barrel. Mints are *very* hardy, and they usually don't freeze out over winter—although every now and again we do lose one of the more delicate variegated varieties," she says.

Of course, if you have the room to give mint a contained corner or a stream bank or a field all its own, it will be *very* happy. Consider growing it along the edge of your lawn; "every time you mow, you will get a whiff of pleasant fragrance," says Kate Jayne.

If, however, your mints prove once again their legendary invasiveness and you must pull out a patch, do so in spring when the soil is moist but not soggy. Mint roots stay pretty close to the surface and will come up easily and in clumps when the soil is nice and soft.

LEMONS, ANISE & OTHERS

Lemon verbena isn't as wanton a spreader as mint, but it *does* like to take naps. "People always come into the Rosemary House and tell me that their lemon verbena died; 'it lost all its leaves,' they say. I tell them that lemon verbena doesn't die, it sleeps," explains Bertha Reppert.

Lemon verbena is a "semi-deciduous" woody plant (in the tropics it will grow into a small tree) with a strong, true lemon aroma and flavor—just brushing the leaves sends up clouds of citrus scent. It's a tender perennial, so if you want to grow it in the North, put it in a pot and bring it indoors in winter. Even in a

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CARL DONEYWILL

69

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PHOTOS BY ROB CARDILLO (TOP) AND DAVID CAVAGNARO

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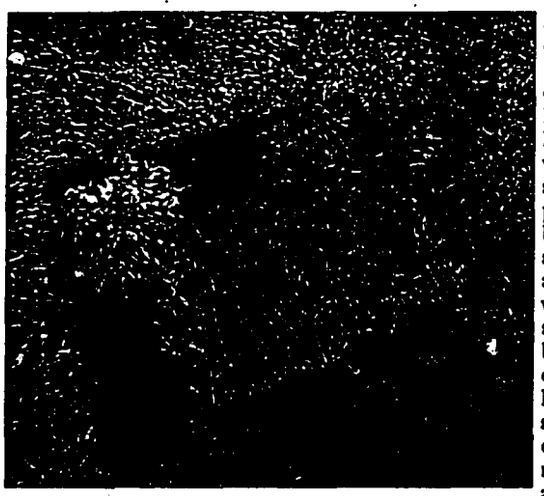


Lemongrass (above left); spearmint cut and laid out for drying (above right); and chocolate mint (left).

pot, "the plant will get enormous and leggy, so cut it back hard to keep it bushy," advises Reppert.

You can *try* to keep it green all winter long, but the easiest way to handle it is to let it go dormant for awhile. Do this the way Carol Peterson does and you'll get the added bonus of a final easy harvest. "I bring the plant inside and set the pot on newspapers in a dark basement," she explains. "The leaves dry up and drop onto the newspapers, and we just move the pot and pick up the newspapers to gather our tea leaves for the winter. It's *very* handy—you don't have to pick the leaves off the plant or dry them or do anything!"

While your lemon verbena sleeps through the off season, be sure the soil in the pot doesn't dry out *completely;* water it often enough to keep it just slightly moist. In late winter or early spring, move the pot out of the basement into a sunny window and give it more water. "Pretty soon, little green buds will pop out everywhere," says Peterson. After spring warms up completely, move it outside again for the summer.

If your lemon verbena gets rootbound but you don't want to move it into a bigger pot (or if some of your tea-drinking friends would like a lemon verbena plant of their own), you can take cuttings to reduce the pot-pressure and/or start new plants. Cut off 6 inch long sections of the soft fleshy tips of the stems, remove the leaves from the bottom half of the stems and stick the stems into containers filled with a mixture of vermiculite and perlite (see last issue's special seed-starting section for exhaustive detail). Set the containers in a shady area, keep the mixture moist, and in about six

CLASSIC CAREFREE CHOICES TO CULTIVATE FOR YOUR COZY CUPS OF CONTENTMENT

NAME	BOTANICAL NAME	TYPE	FLAVOR	PROPAGATION	SOURCES
PEPPERMINTS					
Peppermint	(*Mentha X piperita*)	Hardy perennial	Strong menthol	Plants, root divisions or cuttings	1,2,3,4,5,6
Chocolate peppermint	(*Mentha X piperita Mitcham*)	Hardy perennial	Peppermint patty	Plants, root divisions or cuttings	2,3,5,6
Orange mint	(*Mentha X piperita citrata*)	Hardy perennial	Citrus overtones	Plants, root divisions or cuttings	2,3,4,5,6
SPEARMINTS					
Spearmint	(*Mentha spicata*)	Hardy perennial	Mild menthol	Plants, root divisions or cuttings	1,2,3,4,5,6
KENTUCKY COLONEL	(*Mentha spicata*)	Hardy perennial	Strong spearmint	Plants, root divisions or cuttings	3,4,5,6
FRUITY MINTS					
Apple mint	(*Mentha suaveolens*)	Hardy perennial	Fruity apple	Plants, root divisions or cuttings	2,3,4,5,6
Pineapple mint	(*Mentha suaveolens* VARIEGATA)	Hardy perennial	Fruity pineapple	Plants, root divisions or cuttings	2,4,5,6
OTHER HERBS					
Anise hyssop	(*Agastache Foeniculum*)	Hardy perennial	Lightly licorice	Seeds or plants	1,2,3,4,5,6
Chamomile	(*Matricaria recutita*)	Annual	Lightly floral	Seeds	1,2,3,4,5,6
Lemon balm	(*Melissa officinalis*)	Hardy perennial	Lightly lemon	Plants, root divisions or seeds	1,2,3,4,5,6
Lemongrass	(*Cymbopogon citratus*)	Tender perennial	Strongly lemon	Plants or root divisions	3,4,5,6
Lemon verbena	(*Aloysia triphylla*)	Tender perennial	Strongly lemon	Plants or cuttings	2,3,4,5,6

PHOTOS BY (CLOCKWISE FROM TOP LEFT) BOB CARDILLO, DAVID CAVAGNARO AND MICHAEL S. THOMPSON (2)

weeks you'll have new little plants with strong roots!

Another source of wonderful lemon flavor is lemongrass, a tropical plant that will commonly grow into an 8 foot tall clump in a warm climate. "Asian people use its fleshy stems in soups, but the leaf has more flavor," says Peter Stark, "and that's what we use for tea. We grow lemongrass in the ground—not a container. It's a fast growing tender perennial, and just before frost comes we cut it to the ground and harvest and dry the leaves."

Fruity pineapple mint

To start *next* year's lemongrass crop, you "lift out some of the roots after you harvest in the fall. You'll have to pull them apart— lemongrass grows (and looks) just like crabgrass," says Stark. "Plant those roots in a soil-free medium in a pot with good drainage. Set the pot in a dim place for a few days to let the roots rest, then move it into bright light and keep it indoors for the winter, just like a houseplant." If you want to grow lemongrass in a pot year-round, you'll have to divide those roots every other year or so.

Because lemongrass and lemon verbena naturally grow into such big, strapping plants, Stark gives them a little extra fertilizer, specifically fossilized sea bird guano (yum!). He mixes 8 ounces of the powdered guano into 5 gallons of water and waters his plants with the concoction once every two weeks.

Lemon balm, yet another lemon-scented herb, is softly sweet (maybe that's why bees love it so much). It's actually in the mint family, but it's not a *close* relative, so it's not *quite* as aggressive as mint—but it will spread to fill up a garden, especially in mild climates. Let it do so if you have the room—its round, delicate finely lined leaves are great at adding interest to any garden corner.

"Just be aware that lemon balm will grow wherever its seeds are thrown, *and* it will also self-sow in great quantity," warns Pam Woodroffe ruefully. "If you don't keep the flowers clipped, you will end up with an entire garden full of lemon balm!"

(Note: Lemon balm and many other lemon-scented herbs have been shown to be *very* effective insect repellents in controlled scientific studies. Crush up a bunch of leaves and rub onto exposed areas of skin; the scent will keep skeeters away!)

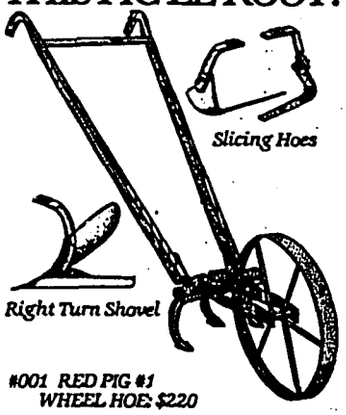
Anise hyssop is sometimes called licorice mint, although it's not really a mint. It *is* a handsome plant, however—growing to 4 feet tall and topped with fuzzy blue bullet shaped flowers abuzz with bumblebees. Plant it in the back of a border—or someplace else where the bees it attracts (who will pollinate *all* your food and flower crops for you) won't bother you personally.

Lemon balm and anise hyssop are both easily grown from seed. Start them inside in containers and set young plants out into the garden (after hardening them off for a week or so) after danger of frost has passed. Or wait until the weather warms up and direct-seed them where they are to grow. "Anise hyssop is a hardy perennial that comes back every year and it also seeds itself as well," says Carol Peterson.

Chamomile has a reputation for making a calming tea. It's a pretty little plant, too—growing to about 8 inches tall with delicate, ferny leaves and little daisy-like flowers with white petals and yellow centers. Those flowers—the part of the plant that you want to harvest for tea—add a sunny, flowery flavor to your herbal tea mixes. "Clip off the flowers anytime after their little white petals appear and dry them," instructs Peterson.

"Chamomile doesn't need as much water as mint and can grow pretty much anywhere," adds Peterson, who gardens in Washington state. "Just direct-seed it right into the garden after all danger of frost

THIS PIG'LL ROOT!



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Red Pig No. 1 is made in the USA with old fashioned quality. The handles are hickory and are designed to transfer your energy directly along their axis to the ground engaging tools. The frame is cast iron. The wheel and bolt-on tools are forged steel. They include a moldboard or turn shovel for ploughing, furrowing, hilling-up and turning-in; three duck foot teeth for cultivating, aerating and raking; and a pair of six-inch slicing hoes for close, fast weeding in 6" to 12" swath. ❦ The low-wheel design, with its weight close to the ground and the tool located at the end of the handles, is easier to control than a high-wheel cultivator. Using a wheel hoe is easy. Just push and pull, two feet forward, one foot back, as you move ahead. In light soil, just push. It's great exercise and no more difficult than wrestling a rototiller. Besides, it uses no gas or oil, doesn't pollute, needs no maintenance, and starts every time.

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Brewing the perfect pot of tea

Herbal teas are at their best when brewed lightly and delicately. Here are the basic steps to making a perfect pot of tea:

1. Keep the leaves as whole as possible until you want to make tea! Wait to crush them until the very last minute before you're ready to put them into the tea ball, tea bag or pot.
2. For each 6 to 8 ounce cup of tea you're brewing, use 1 *teaspoon* of dried leaves or 1 *tablespoon* of fresh leaves. Adjust to taste, as you gain experience.
3. Heat clean filtered water until it boils, then pour it over the tea ball, tea bag, etc., in the tea pot.
4. Let the tea steep for six to 10 minutes.
5. Pour into cups and add sweetener or lemon, if desired.
6. Drink and enjoy!

—J.P.

has passed in spring. I throw the seeds onto prepared ground and don't ever cover them. I just pat them down, which gets them into the soil enough to get them started."

In general, herbal tea plants are undemanding and will grow like weeds almost anywhere you plant them—but they'll do *best* in soil that is loose and well-drained. "All herbs need to have good drainage," stresses Peterson.

Herbs are also undemanding when it comes to food. "A compost-enriched soil is ideal," says Peter Stark. "You don't want to overfertilize herbs; you're growing for flavor, not for size. In fact, less fertilizer gives you a slower, steadier growth that I find results in a better flavor."

Stark also uses a cut alfalfa mulch around his mints and other tea plants, so that "when it rains, the mud doesn't splash up on the leaves," he explains. "The mulch also keeps the soil friable and holds in moisture; and when I till it in at the end of the season it adds nutrients and organic matter."

HOW AND WHEN TO HARVEST

Anytime—spring, summer or fall—is a good time to harvest leaves for herbal teas. "These plants like to be picked a *lot*," says Carol Peterson, who adds that frequent cutting makes the plants grow nice and bushy. "You can take two or three full harvests per season," she says. "Cut the plants to within a few inches of the ground and they will grow right back." The flavor of your tea leaves will be best if you cut *before* the plants flower—but if you miss this window, don't worry; most of the flowers make a nice tea, too.

The best time of day to harvest herbal teas is about 10 a.m., estimates Peterson—when the leaves are at their peak of flavor and the sun has dried off the morning dew. Harvest individual leaves or short sections of stems, and be gentle when you do—bruising the leaves will release their fragrance and flavor prematurely.

To dry the leaves (or in the case of chamomile, the flowers), use a food dehydrator or tie them into bunches and hang them, keeping them in the dark while they dry. "The darker the better," says Peter Stark. "We hang our fresh herbs in paper bags in our solar greenhouse or lay them on a screen under a black shade cloth." If you don't have a dehydrator (or a solar greenhouse), hang your herbal bunches in any airy, dark, dry space—or lay them on top of paper towels and underneath some cheesecloth on top of your refrigerator.

When the leaves are crispy dry, separate them from the stems, keeping the leaves as whole as possible to preserve the flavor. "I put the whole dried leaves into glass jars with airtight lids, and I don't crowd them," says Carol Peterson. Plastic bags are also a good place to store dried herbs. Just don't put jars or bags—or anything—containing your herbs in the cupboard over your kitchen stove; the heat will hasten the evaporation of their essential oils!

HERBAL TEA BLENDS

Perhaps the most exciting part about growing your own herbal teas is that it allows you to put together your own signature herbal tea blends. "One blend I keep on hand all the time is lemon balm or lemon verbena plus chamomile; it's a very soothing bedtime tea," says Carol Peterson. "Another favorite is two parts of anise hyssop to one part of lemon balm, with maybe a touch of basil thrown in," she adds.

Basil? Yes! Many of the culinary herbs that may already be growing in your garden can be used to add heady, exotic lilts to your tea pot. "One of the best teas in the world is a mixture of rosemary and lemon balm or lemon verbena," says Bertha Reppert. "Sage makes a great tea, too," she adds.

In fact, the list of tasty herbal tea ingredients is almost endless! If you're *really* ambitious, you can buy empty tea bags, fill them with your homegrown, personally blended teas, design your own label and put them together in boxes or bags as gifts for your friends. Be careful, though; you could end up like Mo Siegel, and have millions of friends-to-be beating down your door to sample those delicious teas!

SOURCES

1. The Herb Farm
Norton, NB
Canada E0G 2N0
Catalog $5; price list $2 plus SASE

2. Nichols Garden Nursery
1190 North Pacific Highway
Albany, OR 97321
Free catalog; sells empty tea bags

3. Renaissance Acres Organic Herb Farm
4450 Valentine
Whitmore Lake, MI 48189
Catalog $2.50; send SASE for brochure.

4. Richter's
Goodwood, ON
Canada L0C 1A0
Catalog $2

5. Sandy Mush Herb Nursery
316 Surrett Cove Road
Leicester, NC 28748
Catalog $4

6. Well Sweep Herb Farm
317 Mt. Bethel Road
Port Murray, NJ 07865
Catalog $2

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Note:
The European Community (EC) officially adopts the name European Union (EU), effective November 1993.

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