Table 1. Introductions of underutilized plants and promising lines identified

S.No.	Botanical Name	Total No. of accessions	Sources	Promising lines
1	Amaranth (*Amaranthus* spp.)	645	Kenya (35), Nigeria (48), Russia (41), USA (342)	72, Suvarna*
2	Buckwheat (*Fagopyrum* spp.)	134	Hungary (23), Japan (30), Nepal (29), USA (17), USSR (17)	30
3	Chenopods (*Chenopodium* spp.)	216	Germany (24), Nepal (15), UK (28), USA (89)	17
4	Job's tear (*Coix lachryma*)	17	Brazil (2), Japan (5), USA (3)	
5	Winged bean (*Psophocarpus tetragonolobus*)	183	New Papua Guinea (26), Philippines (21), Thailand (59), USA (17)	88
6	Adzuki bean (*Vigna angularis*)	101	Belgium (7), Colombia (5), Nigeria (11), USA (73)	92
7	Rice bean (*Vigna umbellata*)	79	Belgium (6), Brazil (5), Colombia (5), Indonesia (8), USA (53)	53
8	Broad bean (*Vicia faba*)	1016	Bulgaria (155), Germany (130), Italy (120), Syria (360), USA (98)	36
9	Paradise tree (*Simarouba glauca*)	5	El Salvador (2), Italy (1), UK (1), USA (1)	1
10	Perilla (*Perilla fruitescence*)	2	Japan (1), Hungary (1)	1
11	Bitter apple (*Citrullus colocynthis*)	12	USA (9)	
12	Water melon (*Citrullus lunatus*)	138	Denmark (3), Taiwan (13), USA (117)	
13	Salt bush (Atriplex *spp.*)	36	Australia (5), France (4), Israel (4), USA (15)	3
14	Bamboo (*Bambusa* spp.)	2	Japan (2)	
15	Horse tail tree (*Casuarina equisetifolia*)	25	Australia (8), USA (11)	
16	Su-babool (*Leucena leucocephala*)	488	Australia (139), UK (132), USA (172)	
17	Cuphea (*Cuphea wrightii*)	32	USA (32)	
18	Euphorbia (*Euphorbia* spp.)	30	Mexico (3), Spain (8), USA (15)	
19	Jatropha (*Jatropha curcas*)	2	Ghana (1), Nigeria (1)	
20	Guayule (*Parthenium argentatum*)	28	USA (28)	1, Arizona-2*
21	Jojoba (*Simmondsia chinensis*)	170	Australia (1), Israel (2), UK (1), USA (166)	1, EC 33198*
	Total	3361		395

* Released for cultivation

for use as a lubricant in high pressure machinery and is a substitute for sperm whale oil. On the other hand, kernels of paradise tree contain 55 to 60 per cent edible oil, quality of which is comparable to that of groundnut.

A summary of germplasm introductions and promising lines identified for cultivation is presented in the Table 1.

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Quality Evaluation of Some Exotic Lines of Ocimum Germplasm

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Key Words: Basil, Volatile Oil, Hydro-distillation, Evaluation

Ocimum belongs to family *Lamiaceae* amd is commonly known as basil. It is distributed in the tropical and warm temperate regions of the world. Ten exotic lines of *Ocimum basilicum* have been introduced from various countries.

Ocimum oils are classified on the basis of their chemical composition rather than by their botanical origin. Sweet basil aromatic in nature yields a volatile oil which is used as flouring agent and also as a perfumery material. The fragrant leaves are used for flavouring sauces, salads and soups.

The above ten accessions have been studied for their qualitative and quantitative parameters (essential oil content, physico-chemical properties and aroma constituents by GC.). These germplasm were grown in 2003-2004 at Issapur experimental station of NBPGR, New Delhi.

Fresh material of all these accessions was subjected to hydro-distillation using Clevenger's apparatus, at NBPGR, New Delhi. The essential oils so obtained were dried over anhydrous Na_2SO_4. The oil percentage of ten accessions varied from 0.09 to0.16 percent on dry weight basis.

These dried oils were studied for their physico-chemical properties and further analysed for their aroma

constituents over Gas Liquid Chromatograph (GLC) model Perkin Elemer Auto System equipped with capillary column Carbowax 20M of 50 m length, Flame ionization detector, Okidata 320 M recorder, Digital computer DEC station fed with Total Chrome Navigator software and nitrogen as carrier gas in the chemical laboratory of NBPGR, New Delhi. Volatile aroma constituents were identified on the chromatogram by comparing their retention time with authentic compounds. Based on the chemical composition several chemotypes were identified (Pareek *et al* 1982 and Sobti and Pushpangadan, 1982) Physico- chemical constants were also studied. These were found to be in the prescribed range.

On the basis of major aroma constituents, the germplasm were grouped into different chemotypes (AICRP, 1998). On the same basis, basil oils have been grouped together into three chemotypes *i.e.* European type (rich in methyl chavicol), linalool rich and methyl chavicol and linalool rich. GC profile of ten accessions showed the presence of above-mentioned chemotypes as given below.

Linalool Rich

EC-174527 (methyl chavicol-0.38 %, linalool-67.13%), EC-388772 (methyl chavicol-16.37%, linalool-60.72%), EC-338782 (methyl chavicol-14.23%, linalool-32.48%), EC-387838 (methyl chavicol-4.53%, linalool-73.63%) and EC-338794 (methyl chavicol-4.57%, linalool-74.87%).

Methyl Chavicol Rich

EC-338785 (methyl chavicol-89.32%, linalool-1.14%) and EC-388890 (methyl chavicol-67.28 %, Linalool-26.99%)

Methyl Chavicol and Linalool Rich

EC388893 (methyl chavicol (42.16%, linalool-47.12%), EC-388788 (methyl chavicol-47.88%, linalool-38.65%) and EC-388891 (methyl chavicol-48.1%, linalool-37.59%).

The above study reveals that these accessions find use in perfumery and flavour industry. The accessions rich in methyl chavicol may find use in flavour and confectionery industry where as linalool rich germplasm can be useful in perfumery industry

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Augmentation and Evaluation of *Sesbania* Germplasm

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The role of green manuring in improving soil fertility and crop productivity is well recognized. *Sesbania* is one of most important green manuring crop and is biodegradable, eco-friendly and organic rich bio-fertilizer. It belongs to family Fabaceae tribe Robineae. It is a versatile leguminous crop, distributed in tropical and subtropical areas of Indian sub-continent and also distributed in tropical areas of Africa, Southeast Asia, China and West Indies.

In the present study, 159 accessions belonging to 32 species of *Sesbania* were introduced from Australia; Brazil; CIAT, Columbia; Ethiopia; and IRRI, Philippines, have enriched genetic resources of *Sesbania*. Species of *Sesbania* augmented were *S. aculeata*, *S. afraspera*, *S. bispinosa*, *S. campylocarpa*, *S. cannabina*, *S. cinerascens*, *S. coerulescens*, *S. emerus*, *S. erubescens*, *S. exaltata*, *S. exasperata*, *S. formosa*, *S. goetzei*, *S. grandiflora*, *S. greenwayi*, *S. herbacea*, *S. hiristyla*, *S. keniensis*, *S. leptocarpa*, *S. macrantha*, *S. microphylla*, *S. nilotica*, *S. pachycarpa*, *S. punctata*, *S. quadrata*, *S. rostrata*, *S. sericea*, *S. sesban*, *S. simpliaiuscula*, *S. speciosa*, *S. tetraptera*, *S. virgata*. Some of the lines introduced from Ethiopia are with high nitrogen (*S. cannabina*, EC 507726 and *S.rostrata*, EC507727) and with profuse nodulation (*S. afraspera*, EC507728 and *S. nilotica*, EC 507729). Some of the species (*S. virgata*, *S. sesban* var. *sesban*, *S. sesban* var. *bicolour*) introduced from Brazil are perennial in nature.