Priorities for Introduction of Fruit Crops in India

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India has diverse agro-climatic regions comprising tropical, sub tropical and temperate regions, where we can grow various kinds of crops including fruit plants. We have achieved a lot, particularly in the improvement of field crops and almost reached at peak. However, breeders are trying their level best to increase the income of the farmers by applying various latest techniques for improving the productivity. Hence, there is a need to diversify the Indian agriculture, and for this purpose the new fruit crops, which are nutritiously rich and can be grown on marginal lands should be introduced for their acclimatization/ adaptation in the country.

Keeping in view the importance of these new fruit plants, NBPGR is exploring the possibilities for introduction of these valuable fruit plants on priority. In the past, NBPGR introduced 5,687 accessions of 104 fruit crop species comprising temperate, tropical and sub-tropical fruit plants during 1976 to 2004. This process is continued and the details of introduction made from 1996 to 2004 are given in Table 1. Notable among them are new fruit crops like, kiwi fruit (*Actinidia chinensis*), nectarine, low chilling peach and apples, feijoa (*Feijoa sellawiana)* rich in vitamin C and also resistant to wilt, West Indian cherry (*Malpighia puniciflolia*), a rich source of vitamin C and fruits are suitable for jelly preparation. In papaya, the useful cultivars like sunrise, HCAR-29, mardol and caw flora and several *Carica* species like *C. gondotiana, C. cauliflora, C. sphaerocarpa, C. guaciflora, C. monica, C. pubescens* and, *C. stipulata* which are source of resistance to various disease/pests and frost are promising introductions; Jacoticaba (*Myrciaria cauliflora*) bears black berries on the main trunk of the plant, good for jelly and alcoholic beverage; *Eugenia, Fortunella* spp., rambuttan (*Nephelium lappaecum*), seabuckthorn (*Hippophae rhamnoides*) rich in vitamin C, prickly pear (*Opunita ficus-indica*), babaco (*Carica pentagona*) and paw paw (*Asimina triloba*); in nuts hazelnut, peacannut, macadamia nut have also been introduced (Gupta and Rai, 1996 and Singh *et al.,* 2001).

The priority will be given to introduce rare and nutritionally rich fruit crops like, african pear (*Dacryodes edulis*), black sapote (*Diospyros ebenum*), marula nut (*Selerocarya birrea*), mangosteen (*Garcinia mangostana*) and chestnut (*Castanea dentata*) etc. (Arora and Rao, 1994). In addition, the trait specific and commercially important cultivars viz., shell dehiscence type of pistachio nut, thin shelled and regular bearer type of pecan nut, thin shelled and soft kernel type of walnut, paper shelled almond, good fruiting quality figs, high oil type olives, superior varieties of apple, peach, pear, plum and apricot along with their dwarf and drought resistant root stocks; in other fruits, frost resistant type currants, spineless stem type of gooseberry, winter hardy blueberry, good aroma type of crane berry, improved varieties of raspberry. In tropical fruits, coloured mango varieties, banana resistant to bunchy top virus, parthenocarpic and wilt resistant guava varieties, papain type cultivar and resistant to leaf curl virus of papaya; in arid fruits improved varieties of date palm and non cracking pomegranate are presented in this paper.

In the view of the overall importance of tropical fruit trees and their future potential in India, an attempt has been made to list some of the tropical fruits which have less diversity and can be introduced in India are given in Table 2.

There is also a need to give more weightage to new breeding objectives to get the desired results such as increased stress tolerance, biological efficiency with

Table 1. Import of germplasm of different fruit crops during 1996-2004

Import	Years									
	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
No. of accessions	90	87	226	347	389	166	356	343	143	2147
No. of genera	14	10	24	17	26	10	23	19	17	160
No. of species	28	16	28	12	82	38	20	26	24	274
No. of countries	7	7	39	3	11	06	08	13	12	106

Table 2. List of fruits crops to be introduced on priority

Fruit	Source Country	Traits/ Value
Actinidia rubricaulis	China	Cultivated, for edible fruits
Alectryon excelsum	New Zealand	Fruit testing like strawberry
Anisophyllea laurina	Tropical Asia, Tropical Africa	Edible, preserves as jelly and nutritionally rich
Alligator Pear (*Anona glabra*)	Sub-tropical America, W. Tropical Africa	Suitable for jelly making
Plum Mango (*Bouea macrophylla*)	Indonesia	Fruits eaten raw and cooked used as pickles
Odara Pear (*Chrysophyllum africanum*)	Tropical Africa	Fruits are much liked by the natives and are of an apricot colour and of pleasant acidic pulp rich in vitamin C
Ceylon Gooseberry (*Celastroides* spp.)	Srilanka	Good for jelly preparation
Surinam Cherry (*Eugenia michelii*)	Tropical America	Orange red to black fruit, eaten fresh, also used for jam making
Paniala (*Acourtia jangomas*)	Tropical Asia, Madagascar, S. Africa, Hawaii	Edible fruits, good for jam preparation
Indian Plum (*Flacourtia sepiaria*)	Tropical Asia; Hawaii	Fruits edible, sweet, mildly acidic, juicy and suitable for pies
Dulitan (*Madhuca obovatifolia*)	Philippines; Malaysia	Fruits resembles sapodilla, but larger in size
Marney (*Mammea americana*)	Tropical America	Fruits is edible used for wine, sauce and jam preparation
Nephelium mutabile	E. Trop. Asia	Fruits eaten fresh, some varieties are sweets and resemble like rambutan
Wild Cachima (*Rollinia mucosa*)	West Indies; Mexico; S. America	Fruit pulp is mucilaginous, mixed in ice cream
Caffir Marvolanut (*Sclerocarya caffra*)	S. Africa	The mature fruit smells like apple and the edible fleshy part is white, very juicy and taste like slight guava flavour. Stone also edible

reduced input etc. the plant breeders are now also forced to study the wild germplasm for getting sources of resistance for these traits so that the valuable/desired genes may be exploited to improve the productivity and quality of the fruits. To keep up with ever–increasing needs of our modern agriculture systems, the development of broad–based germplasm pool carry in genes for resistance to disease, insect, nematodes, tolerates to hostile environmental stresses and potential for high productivity of superior quality must be available to the plant breeders, if they are to be successful in developing competitive new varieties. These objectives will be kept in mind while introducing the germplasm from diverse sources.

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