

Cultivars and their wild relatives of Navasari and Valsad district

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There are about 2,00,000 plant taxa distributed in wide range of habitats of these only few are cultivated. The cultivated plant fulfills most of the basic requirements of the living beings. Very few cultivated plants are consumed as food. It seems that all these plants must have been wild once upon a time before the initiation of the human civilization that originated on the banks of the rivers and gradually adapted, flourished and acquainted into the steady settlement. The requirement of food was achieved by domestication of pets and cultivation by sowing of food giving plants. Further developments must probably have followed the under mentioned course.

- Human selection pressure
- Selection of different plant parts as a source of food,
- The requirements other than food viz., fibers, medicines, shelter, fodder, etc.,
- The conservation of genome of selected taxa.

The earlier relatives of the then cultivars were wild and were left to natural selection pressures, both natural and anthropogenic. Wild relatives in the course of evolution and all the present day wild plants can be designated, as successful products of the process of evolution. The wild equivalents of the cultivars have to face the different environmental factors as compared to those faced by the cultivars throughout the ages. The wild plants were and are still susceptible to floods, heavy sedimentation, drought, changing in climate, etc. The cultivars on the other hand are well protected by the techniques developed by the human being. The human intelligence moderates the natural effects of the natural environmental factors.

During the entire process of agricultural revolution – natural hybridization, segregation of characters, thoughtful human selection like early maturing, late maturing, differential productivity, drought resistance, disease resistance etc. have played the important role. Present day cultivars are the result of sum total of the aforesaid phenomena.

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Cultivated plants and their possible wild relatives

Crop plants	Wild relatives / cultivars
Cereals and millets	
<i>Oryza sativa</i>	<i>Oryza nivara</i>
<i>Pennisetum americanum</i>	<i>Pennisetum purpureum</i>
<i>Sorghum bicolor</i>	<i>Sorghum halepense</i>
<i>Saccharum officinarum</i>	<i>Saccharum spontaneum</i>
<i>Zea mays</i>	<i>Coix lachryma-jobi</i>
<i>Eleusine coracana</i>	<i>Eleusine indica</i>
Pulses and leguminous crops	
<i>Vigna dalzelliana</i>	<i>Vigna aconitifolia</i> , <i>V. umbellata</i> and <i>V. khandalensis</i> .
<i>Vigna radiate</i>	<i>Vigna trilobata</i> and <i>V. radiata</i> var. <i>sublobata</i>
<i>Clitorea ternetea</i>	<i>Clitorea biflora</i>
<i>Cicer arietinum</i>	<i>Vigna mungo</i> var. <i>silvestris</i>
<i>Cajanus cajan</i>	<i>Atylosia sericea</i>
<i>Bauhinia purpurea</i>	<i>Bauhinia variegata</i>
<i>Medicago sativa</i>	<i>Medicago polymorpha</i>
<i>Pisum sativum</i>	<i>Lathyrus sativus</i>
<i>Trigonella foenum-graecum</i>	<i>Trigonella corniculata</i>
Fruit crops	
<i>Musa paradisiacal</i>	<i>Ensete superbum</i>
<i>Morus alba</i>	<i>Morus indica</i>
<i>Murraya paniculata</i>	<i>Murraya koeningii</i>
<i>Syzygium cumini</i>	<i>S. heyneanum</i>
<i>Zizyphus mauritiana</i>	<i>Z. oenoplia</i> , <i>Z. rugosa</i> and <i>Z. xylocarpus</i>
<i>Carrisa conjesta</i>	<i>C. spinarum</i>
<i>Manilkara hexandra</i>	<i>Mimusops elengi</i>
<i>Citrullus lanatus</i>	<i>Citrullus colocynthis</i>
Vegetables	
<i>Abelmoschus esculentus</i>	<i>Abelmoschus manihot</i>
<i>Allium cepa</i>	<i>Dipcadi serotinum</i>
<i>Amaranthus caudatus</i>	<i>Amaranthus hybridus</i> , <i>Amaranthus spinosus</i> , <i>Amaranthus tricolor</i> , <i>Amaranthus viridis</i> , <i>Amaranthus lividus</i>
<i>Capsicum annuum</i>	<i>Capsicum frutescens</i>
<i>Curcuma longa</i>	<i>Curcuma amada</i> , <i>C. inodora</i> , <i>C. pseudomontana</i>
<i>Cucumis melo</i>	<i>Cucumis setosus</i>
<i>Luffa acutangula</i>	var. <i>Luffa acutangula</i> var. <i>amara acutangula</i>

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<i>Momordica charantia</i>	<i>Momordica dioica</i>
<i>Moringa oleifera</i>	<i>Moringa concanensis</i>
<i>Portulaca pilosa</i>	var. <i>Portulaca oleracea</i>
<i>grandiflora</i>	
<i>Solanum melongena</i>	<i>Solanum incanum</i>
<i>Trachyspermum ammi</i>	<i>Trachyspermum roxburghianum</i>
<i>Dioscorea alata</i>	<i>Dioscorea bulbifera</i>
Oil yielding seed plants	
<i>Sesamum indicum</i>	<i>Sesamum prostratum</i>
Fiber plants	
<i>Corchorus capsularis</i>	<i>Corchorus olitorius, C. trilocularis</i>
<i>Crotalaria juncea</i>	<i>Crotalaria retusa</i>
<i>Hibiscus cannabinus</i>	<i>H. sabdariffa</i>
Miscellaneous	
<i>Nicotiana tabacum</i>	<i>N. plumbaginifolia</i>
<i>Catharanthus roseus</i>	<i>C. pusillus</i>
<i>Physalis peruviana</i>	<i>Physalis minima</i>

The wild relatives can be utilized for the improvement of cultivated plants that are of economical importance to the mankind. Arora and Nayar (1985) reported about 323 wild relative species of crop plants distributed in the major botanical provinces of India. These 323 agro-horticulturally important plants can be further classified in to the following categories.

Cereals and Millets	: 53
Legumes	: 32
Fruits	: 108
Vegetables	: 54
Oilseeds	: 12
Tuber plants	: 24

Spices and Condiments : 27

Miscellaneous ones : 26

This diversity is represented over 48 families and 116 genera (Arora and Pandey, 1996).

The state of Gujarat falling into the Western Peninsular and Semi arid botanical province is poorly represented by the wild relatives of cultivated plants accounting to only 5.57 %. Therefore, it is of much concern to conserve this very important wild germplasms both *Ex-situ* and *In-situ*. Very scanty information is available on this line within the state of Gujarat and hence, the present work is a humble effort to survey, compile and document the major cultivars and their wild relatives including their importance to local inhabitants of Navsari and Valsad District in Southern Gujarat. During the present survey, a total of 66 cultivars and its relatives were collected and documented which contributes to the 7.59 % of the total flora of the region. The further analysis is as follows:

Plant groups	Genera	Species	% of total cultivars
Cereals and millets	06	08	12.12
Legumes	07	09	13.63
Fruits	09	14	21.21
Vegetables	15	23	34.84
Oil seed plants	01	02	3.03
Fiber crops	03	07	10.60
Miscellaneous	03	03	4.54
Total	44	66	99.97 %

The genera to species ratio for the cultivars are 1: 1.5. The maximum cultivars and wild relatives obtained are represented by the vegetable group.

REFERENCES

Arora and Nayar (1983). Distribution of wild relatives and related rare species of economics plants in India. In : S.K. Jain and R.R. Rao (Eds.). An assessment plants of India, pp. 287-291

Arora and Pandey (1996). Wild edible plants of India, NBPGR, New Delhi.

