

RESEARCH ARTICLE**Survey and collection of wild relatives of crop plants from Bhandara District, India****Pedhekar AK***Department of Botany, J.M.Patel College Bhandara, MS, India.*

Manuscript details:	ABSTRACT
<p>Date of publication 18.10.2014</p> <p>Available online on http://www.ijlsci.in</p> <p>ISSN: 2320-964X (Online) ISSN: 2320-7817 (Print)</p> <p>Editor: Dr. Arvind Chavhan</p>	<p>The present paper deals with survey and collection of six wild species of the genus <i>Vigna</i>(Fabaceae) In the context of correct names, distribution and environmental adaptability etc, from different localities of Bhandara District of Maharashtra. Presently the species collected so far are rare an uncommon in Bhandara district jurisdiction. The main objective of this survey to introduce and acclimatize these species in the Botanical garden and to study them from different angles to save the biodiversity of nature.</p> <p>Keywords: Survey and collection, wild <i>Vigna</i> Species.</p>
<p>Cite this article as: Pedhekar AK (2014) Survey and collection of wild relatives of crop plants from Bhandara District, India. <i>Int. J. of Life Sciences</i>, Special Issue A2:132-134.</p> <p>Acknowledgements: Tribal people Mr. Ramadas & Mr. Gaju Kodape, forest workers at Bhandara forest Department (fig.1). Mr. Ramu Patekar (shepherd) native of village korambhi near Bhandara assisted to the author time to time during field collections.</p> <p>Copyright: © Author(s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>INTRODUCTION</p> <p>The search for wild species is necessitated for a quest for wider genetic base to solve the problem of resistance to diseases, a greater range of environmental adaptation, better yields and better nutritional and economic character (Ignacimuthu and Babu, 1984). It is true that that very wide gene pool exists in the wild species from which transfer to the cultigens are quite feasible (Smartt, 1981); most species are cross compatible even though partial barriers are naturally to be expected here and there (Singh, 1989). The wild species also assume greater significance when good resistance or adaptation is not found in the primitive cultivars. The species considered to be wild prototypes or more closely related to the cultigen, offer good scope for utilization and exploitation (Jain and Mahra, 1980). Further wild and cultivated forms of overlapping distribution often exchanging genes through introgressing provide unique situation for gene transfer between two population. Today in most crops the need for a wider genetic base is strongly apparent. This can generally be provided from wild species and primitive cultivars.</p> <p>MATERIALS AND METHODS</p> <p>Collection of plant material was carried out by keeping in mind the external features of the genus <i>Vigna</i> especially trifoliolate leaves yellow flowers trailing habit cordate or appendage stipules below the base straight or spirally twisted keel, estate fruit and some more (Chandel,1984). The collection was made in every season of the year august 2011-2012 it was possible to collect four cultivated species viz. <i>V. radiate</i>, <i>V. mungo</i>, <i>V. unguiculata</i> and <i>V. trilobata</i> var. <i>pusilla</i> and <i>V. aconitifolius</i> and three wild forms viz. <i>V. trilobata</i> var.</p>

sublobata from the plain areas of Bhandara district in the next year 2012-2013 search was undertaken in the forest areas where the grazing of animals was strictly prohibited precious wild forms such as *V.angularis*, *V. umbellate* & *V. radiata var.sublobata* were search out. Herbarium sheets of *Vigna unbellata(thumb) ohwi* & *Ohashi Vigna trilobata Verdc.var.trilobata Vigna trilobata Verdc.var.pusilla,Vigna angularis wild Ohwi & Ohashi Vigna radiata wilzek. var. sublobata rob. Verdc.Vigna vexillata A. Rich* were compared with those kept in the herbarium of botanical survey of India Pune and confirmation was made the six wild and four cultivated along with different localities of Bhandara districts are enlisted below.

RESULTS AND DISCUSSION

While studying the wild forms following questions are came acrossed?

Why seeds of wild forms were not giving positive response to emergence like cultivated species in agricultural mode of farming?

Why seeds of wild forms show late germination in nature?

Table 1 :

Name of species	Locality	Species in association	Ecological condition
<i>Vigna trilobata</i> <i>Verdc var. trilobata</i> Fig.3 & 4	Bhandara and its vicinity. Pizdura village 3 km from Temburna phata, Warora Dist. Chandrapur. Korambhi village 5 km. from Bhandara. Khindsi area Ramtek. Not seen in Nagzira Forest.	In association with <i>Indigofera cordifolia</i> , <i>Tephrosia purpurea</i> , <i>Indigofera linnifolia</i> , <i>Alysicarpus sp. Tridax procumbens</i> .	Frequent in grasslands around cultivated fields.
<i>Vigna trilobata</i> <i>verdc.var.pusilla.</i> Fig. 5	Pauni tehsil on hills and on bare land of hilly slopes on eithers road sides nearer to Pauni.	<i>Sida rhombifolia</i> , <i>Sida acuta</i> , <i>Alterrnanthera sessilis</i> , <i>Trichodesma zeylanicum</i> . <i>Goniogyna hirta</i> , <i>Leucas sp. Lagasca mollis</i> .	Growing on gravelly bare land
<i>Vigna angularis</i> <i>verdc. Fig. 6</i>	Road sides of Tumsar to Chandrapur and in core area of the forest	<i>Boerhaavia diffusa</i> . <i>Commelina bengalensis</i> .	Growing in lomy red black or rocky soil in forest.
<i>Vigna radiata</i> <i>(L.)wilczek var sublobata Roxb</i> <i>Verdc.</i> Fig.7	On the bank of Nallah covering the edges of garden & lake near by mouda on either sides of the Nallah of Gunthala on road sides of kamthi to mouda on either sides of steps to khindsi lake Ramtek Dist. Nagpur.	<i>Rhynchosia minima Lagasca mollis</i> , <i>Sebania sesban</i> , <i>Alysicarpus sp. etc.</i>	Growing on the banks of nalahs, ponds, lakes ditches. Trailing on the neighbouring plants/objects soil condition specially humus mixed soil some times on black cotton soil.
<i>Vignavexillata (L.)</i> Rich. Fig.8	From ditches of hill located back side of the hills in the core area 2-3 km interior from kamthi to Nagpur road.	<i>Tectona grandis</i> , <i>bamboos</i> , <i>grasses like Sida rhombifolia</i> , <i>Lantana indica</i> , <i>Trichodesma zeylanicum</i> , <i>in rocky and sloppy places in humus.</i>	Growing in dance thick forest where sunlight is diffused on rocky lomy clay mixed moist soil condition.

Why flowering period in wild forms were late as compared to cultivated species?

The answers of these questions were tried to find out collectively in present study:

It was experienced that when seeds of wild forms sown in the soil at a particular depth as per common agricultural practice of cultivation, seeds were not showing emergence within a expected days or never show germination whereas seeds of wild gave better response to emergence in natural habitats. Shattering of pods is a common feature in wild forms during which seeds thrown with jerk hyphazardly away on the super facial level of the soil. This is because of exposure of seeds to climatic factors like high humidity and cold during winter, high intensity of light and temperature during summer and moisture during rainy season etc. for 6 to 8 months (Sept. to Oct.- June to July). These fluctuations in the environment makes degradation of the outer hard seed coat and slowly the scar and seed coat ruins, and becomes permeable to water seed imbibes water, which results in emergence of seedling is late in wild forms. As the emergence of seedling is late so the flowering periodalso delayed by 15 days or even a month as compared to cultivated species.



Fig. 1: Tribal informants



Fig.2: *V. umbellata*



Fig.3: *V.trilo.var. trilobata*



Fig.4: *Dolichos trilobatus*



Fig. 5: *V. trilo. Var. pusilla*



Fig.6: *V. angularis*



Fig. 7: *V. radiata var. sublobata*

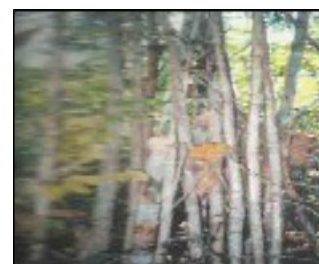


Fig.8: *V. vexillata*

Fig. 1: Tribal Informant's from Korambhi village.(Forest workers of Bhandara.)Whole plant figures, Fig. 2*V. umbellata* (Thunb.) Ohwi & Ohashi. Whole Plant. Fig. 3: *V. trilobata* (L.)Verdc.Var. *trilobata*. whole plant (uprooted). Fig. 4: *Dolichos trilobatus* whole plant, Fig. 5: *V.trilobata* (L.)Verdc.Var. *pusilla* whole plant in natural habitat. Fig. 6: *V. angularis* (Willd.)Ohwi & Ohashi. wholeplant in green house. Fig. 7: *V. radiata* (L.)Wilczek Var. *sublobata* (Roxby.)Verdc. whole plant in natural habitat (uprooted). Fig. 8: *V. vexillata* (L.) A. Rich. whole plant in natural habitat of Nagzira.

CONCLUSION

During the survey of wild *Vigna Species* in Bhandara district and its vicinity, author came across some experiences were already discussed in result and discussion. The plant species so far collected were not acclimatize to the environmental conditions of the plain areas so they can be grown in green houses. The genetical importance of wild plant species is precious so their conservation and maintainance is a present need in view to carry their gene pool in crop plants. the wild relatives of the crop plants were on the way of extinction due to urbanization and unbearable human disturbances, therefore their protection is an urgent need of the present day.

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