



ISSN (E): 2320-3862

ISSN (P): 2394-0530

www.plantsjournal.com

JMPS 2025; 13(3): 324-327

© 2025 JMPS

Received: 04-05-2025

Accepted: 07-06-2025

Dr. Avinash Shivaji Jondhale

Department of Botany, Mahant
Jamnadas Maharaj, Arts,
Commerce and Science College,
Karanjali, Peth, Nashik,
Maharashtra, India

Dr. Smita Pandurang Chavan

Department of Botany, Mahant
Jamnadas Maharaj, Arts,
Commerce and Science College,
Karanjali, Peth, Nashik,
Maharashtra, India

Diversity of wild *Vigna* Species in Savalghat forest Region of Peth Taluka, Nashik, Maharashtra

Avinash Shivaji Jondhale and Smita Pandurang Chavan

DOI: <https://www.doi.org/10.22271/plants.2025.v13.i3d.1876>

Abstract

From many years ago the tribal community totally depend on the forest for their basic needs. Forest is one of the rich sources of healthy, nutritious, residue free wild fruits, vegetables and so on. The present study examined the diversity of wild *Vigna* species in Savalghat forest region of Peth taluka. It was carried out during 2018 to 2021. Total 5 wild species of *Vigna* was found from the study area. Among the species *V. silvestris* and *V. sublobata* was a dominate species observed in this region. *V. khandalensis* was an endemic and threatened species found in Savalghat hill forest region.

Keywords: Endemic, Forest, Savalghat, Tribal, *Vigna* Species, Wild

1. Introduction

Nashik is one of the tribal districts of the Maharashtra with 6197.44 sq.km total tribal area. In the Nashik districts, Peth taluka is also one of the tribal regions situated in hilly area, high rainfall with lesser dense population. Geographically Peth taluka is situated in the high and depth hilly Sahyadri ranges of the Western Ghats (Jonadhale *et al.*, 2018 and Chavan and Jondhale, 2021^[1, 2]). Savalghat is one of the dense forest regions which is situated on bordered of Peth and Dindori taluka. Due to high hilly region in the East of Savalghat the rain water flow is always from East to West. Because of huge vegetation and forest plant diversity there is lot of scope to commit an abundant research work in Savalghat forest region. Previous many researchers work was related to study important ethno-medicinal plants (Jondhale *et al.*, 2018 and Jondhale and Patil., 2019)^[1, 4] and exploration and documentation of some wild *edible* food in tribal region (Chavan and Jondhale., 2021)^[2]. Generally, 90% population of tribal community was dependent on the forest natural resources and product for their daily need. Presently, Peth Tehsil many of forest natural resource was exist because of, illiteracy, deforestation and environmental changes. Now days, this traditional knowledge used of forest resources vanishing because of the modern food habit. For that reason, we started identification, exploration and documentation of wild *Vigna* species diversity of Savalghat.

The genus *Vigna* is one of the important natural resources and utilized for agricultural in breeding purposes. Fabaceae (Legumes) is one of the third largest flowering family in the world (Bhat and Karim, 2009)^[5]. *Vigna* is one of the large groups of family legumes and it is distributed all over the world having more than 200 species (Pratap *et al.*, 2014)^[20]. As per literature survey in the related wild *Vigna* species there is very few researchers' studies and some researcher to work on the comparatively analysis of cultivated and wild species. Babu *et al.*, (1985)^[7] reported that *Vigna* species is a rich diversity occurs in India and also an economically important group of cultivated and wild species. Patil *et al.* (2020)^[4] also reported that six wild species of *Vigna* collected from North-Western Ghats of Maharashtra. Moreover, it was indicated that the wild species of *Vigna* are promising sources of nutrients. In 1988 collecting and expeditions to Southern Africa gathered valuable genetic diversity of wild species of *Vigna* and A remarkable amount of variability is present in the samples of *V. Unguiculata* (L.) Walp (Padulosi *et al.*, 1991)^[9]. Pratap *et al.*, (2018)^[6] were observed that wild *Vigna* species possess a reservoir of useful genes that have potential to be utilized in improvement of cultivated mungbean and urdbean. This evaluation and characterization study on endemic *Vigna* species provides useful information for improving mungbean and urdbean cultivars through recombination breeding.

Savalghat is one of the largest forest diversities in Peth Tehsil and there observed many wild

Corresponding Author:

Dr. Smita Pandurang Chavan

Department of Botany, Mahant
Jamnadas Maharaj, Arts,
Commerce and Science College,
Karanjali, Peth, Nashik,
Maharashtra, India

foods plants. The genus *Vigna* is one of the important wild legume's plants. Oyatomi *et al.* (2016) ^[10] many species of wild under-exploited *Vigna* genus have been reported with good agronomic characteristics such as disease resistance. Similarly, Macorni *et al.*, (1997) ^[11] also reported that *Vigna* genus has an important nutrients and mineral elements. Presently literature study also revealed that in a sample of experienced legume farmers, very few are aware of the existence of wild *Vigna* species and also ignore their uses. Therefore, at present there is not any research work done on floristic diversity or represented genus. So, there is urgent need to study on exploration and documentations on *Vigna* species. Therefore, present investigation to study on exploration, identification and documentation of species diversity of genus *Vigna* in the Saval Ghat region of Peth Taluka, Nashik District, Maharashtra.

2. Materials and Methods

2.1 Description of the study area

The study area of Savalghat forest region is situated between Latitude 20.256767N and Longitude 73.611061E and the total covering study area is 554 ha. Savalghat hills forest region is protected forest area and it is situated between Dindori and Peth Taluka bordered. Savalghat hills is bounded by Dindori Taluka towards East, Peth Taluka towards West, Tryambakeshwar Taluka towards South, Sargana Taluka towards North. Savalghat hills forest is located 40 km north of Nashik and 12 km west of Peth. This region is totally covered by western ghats and there is huge forest diversity. The average rainfall is 1823 mm and highest rainfall in the month of July. This survey was conducted in all over forest region of Savalghat hills during the period of 2018 to 2021. The livelihood of the surrounding tribal community is partially utilized the forest resources food products. Savalghat forest hills are the major forest-built region in Golshi forest region because of, there is huge natural food and fodder resources available.

2.2 Data collection and Identification of *Vigna* species

Presently our study to extensive and continuous field surveys were carried out during 2018 to 2021. The selected *Vigna* species were collected during regular field visits at all the different seasons. During field investigation, some of the important characters like habit, flowering period and common name recorded. Then, the collected plants were pressed and prepared herbarium sheets. These specimens were identified with the help taxonomist and confirmed with available regional floras (Lakshminarasimhan and Sharma, 1991, Sharma *et al.*, 1996, Singh and Karthikeyan, 2001) ^[12, 14].

3. Results and Discussion

In the experimental studies carried out during the period of 2020 to 2022. The present study documents and identified a total of 5 wild *Vigna* species were recorded from the Savalghat forest hills. The results of the wild *Vigna* species survey are presented in Table-1 and all plant botanical names arranged in alphabetical order along with their common name, habit, flowering period and colour, IUCN status and nativity status. All the identified *Vigna* species mainly observed all the sides of Savalghat hills. But, only two species *Vigna khandalensis* and *Vigna vexillata* mostly recorded top end of hills region of Savalghat. There is no published information recorded on the diversity of *Vigna* species of Savalghat hills forest region. Savalghat hill slopes gives rise to many streams that supply water to Gavanpada dam, Inambari dam and

Savalghat reservoir. Present study *V.sublobata*, *V.stipulacea*, *V.vexillata*, *V. silvestris* and *V. Khandalensis* was identified and documented in this region.

Out of five species, *Vigna Khandalensis* is one of the endemic legume species observed in this region. It is commonly known as Ranmung or Badamung and is mostly growing in high hill slope area of Savalghat hill. *V.Khandalensis* is an annual and tall herb or undershrubs up to 1.5 to 2.0 m high plant. Stem is hairy and leaflets deltoid, hairy, terminal ones 3 lobed and lateral 2 lobed. Flower is yellow in colour, pods cylindrical, hirsute and dark brown seeds. The flowering and fruiting period is mostly September and October. Lakshminarasimhan and Sharma (1991) ^[12] were reported that *V.Khandalensis* is an endemic to the Northern Western Ghats in the state of Maharashtra. It also considered as endangered species mentioned as a 'Near Threatened' in the IUCN red list of Threatened species (Chadburn, 2012) ^[15]. Umdale *et al.*, (2018) ^[16] was observed that *V.Khandalensis* high nutritionally important compounds such as proteins, amino acids, carbohydrates and vitamins.

Vigna vexillata (L.) Rich is another one wild important species found in Savalghat hill. It is mostly growing in the top flattened surface of hill region of Savalghat. *V.vexillata* is perennial, twining herb and light purplish or pinkish colour flowers. Leaves 3 foliolate, terminal leaflets, pods linear and cylindrical hairy and seeds rounded, smooth, shiny black in colour. The flowering and fruiting period is mostly August and November. *V. vexillata* species is necessary to addition to flora of Nashik district, because it is not mentioned in flora of Nashik district. It was mostly reported in Northern Western ghats of Maharashtra. Tribal people of this region the seeds of *V.vexillata* is used as wild food.

V.stipulacea (L.) Kuntz is basically found in all the sides of forest region in Savalghat. *V.stipulacea* is semi-erect and trailing herb plant. Long stem and white hairs are present in *V.stipulacea*. Leaves are 3-foliate and terminal leaflets. The flowers shiny yellow colour, pods linear or cylindrical to densely brown hairs colour and seed rounded and black colour. Flowering and fruiting period is September and October during monsoon season. Tomooka *et al.*, (2002) was mentioned that the morphologically *V.stipulacea* and *V.trilobata* are very closely related. But, Difo *et al.*, (2018) reported that *V.stipulacea* is newly recognized as a domesticated Indian *Vigna* species.

V.sublobata (Roxb.) babu and Sharma are twining herbs spreading and found all over the area of Savalghat hill. The stem is long densely covered brown hairs, terminal leaflet rhomboidal and stipules ovule. Apex acute and base rounded in leaflet and yellow colours in flower are present in *V.sublobata*. The pods are linear, cylindrical shape, hairs and dark brown in pod colour. *V. silvestris* is one of the species found in Savalghat hills. It has twining herb, stem long and yellowish-brown hairs. Leaves 3-foliate and terminal leaflets are present. The flower colour is golden yellow, pods linear, cylindrical and a yellowish-brown hair was also observed. Seeds are rounded and brown in colour. Both *Vigna* species have a huge diversity mostly observed in middle and base end of Savalghat hill. The flowering and fruiting period is September and November.

Overall observation, we identified and documented of five *Vigna* wild species i.e *V.silvestris*, *V.sublobata*, *V.stipulacea*, *V.vexillata* and *V. khandalensis* recorded in the Savalghat hill region. *V.silvestris* and *V.sublobata* was a dominate species observed in this region. *V. khandalensis* was an endemic and threatened species found in Savalghat hill. *V.vexillata*,

V.stipulacea and *V.Khandalensis* are the rare species in the forest region of Savalghat hill. All species is mostly growing in monsoon season and flowering and fruiting during period of August to November. The identification, documentation and exploration information of about wild *Vigna* species of various region has been described by several earlier workers (Aditya *et al.*,2017, Tomooka *et al.*,2006, Umdale *et al.*,2018 and Gore *et al.*,2019) [17, 16, 20]. According to Bishet *et al.*, (2005) was also reported that the Western ghats and the Himalayan regions of India represent a rich diversity of

cultivated as well as wild and weedy types of Asiatic *Vigna*. Therefore, present study has highlighted concerns that require immediate attention to exploration, identification and documentation of *Vigna* species diversity in Savalghat hill. Later on, investigation about *Vigna* species in Savalghat hill there is urgent need to conservations of all wild *Vigna* species before they exist in this region. Hence, in future research works to need a collection of more wild species and also necessary to crop improvement of selected wild *Vigna* species.

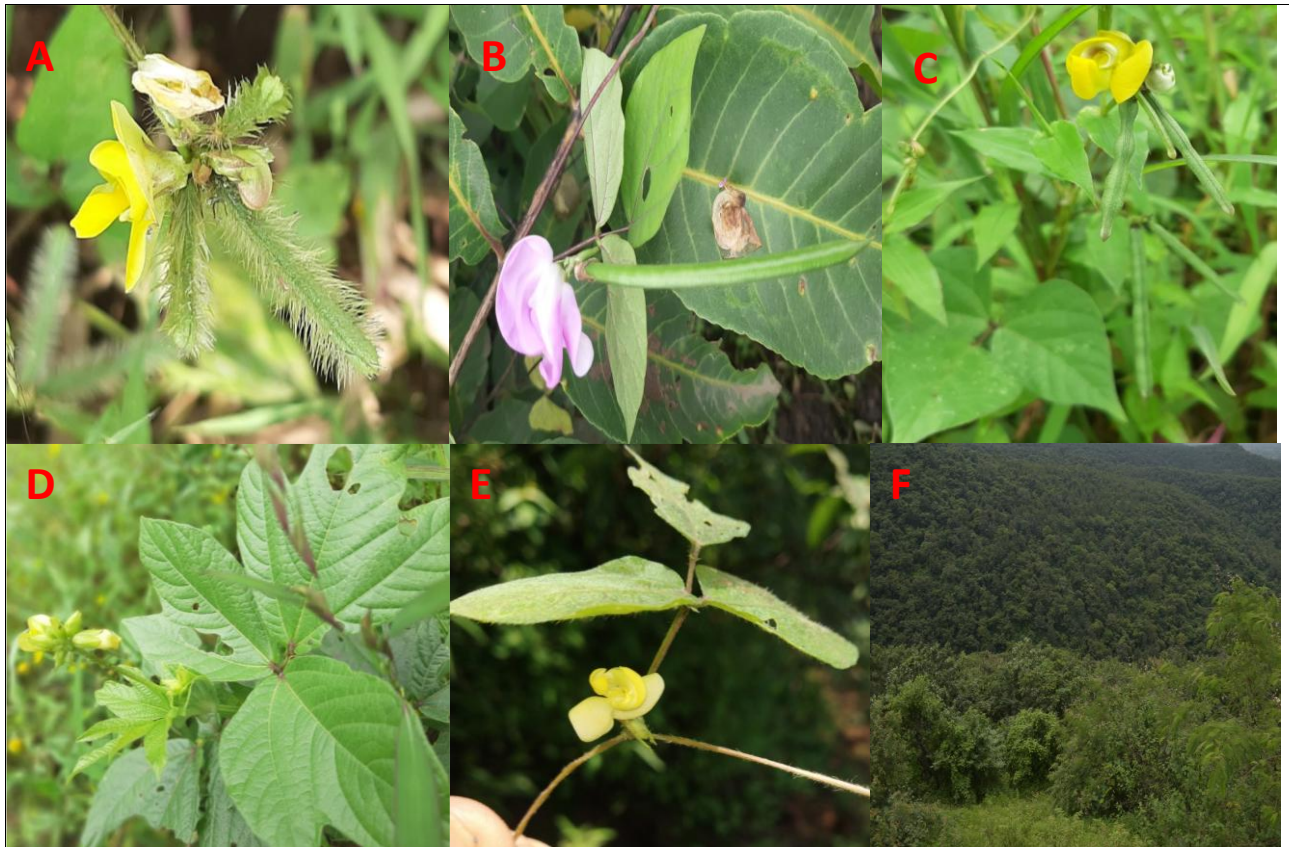


Fig 1 (A to F): - A) Flowering twig of *Vigna silvestris*, B) Flowering twig of *Vigna vexillata*, C) Flowering twig of *Vigna sublobata*, D) Flowering twig of *Vigna khandalensis*, E) Flowering twig of *Vigna stipulacea*, F) View of Savalghat Platu

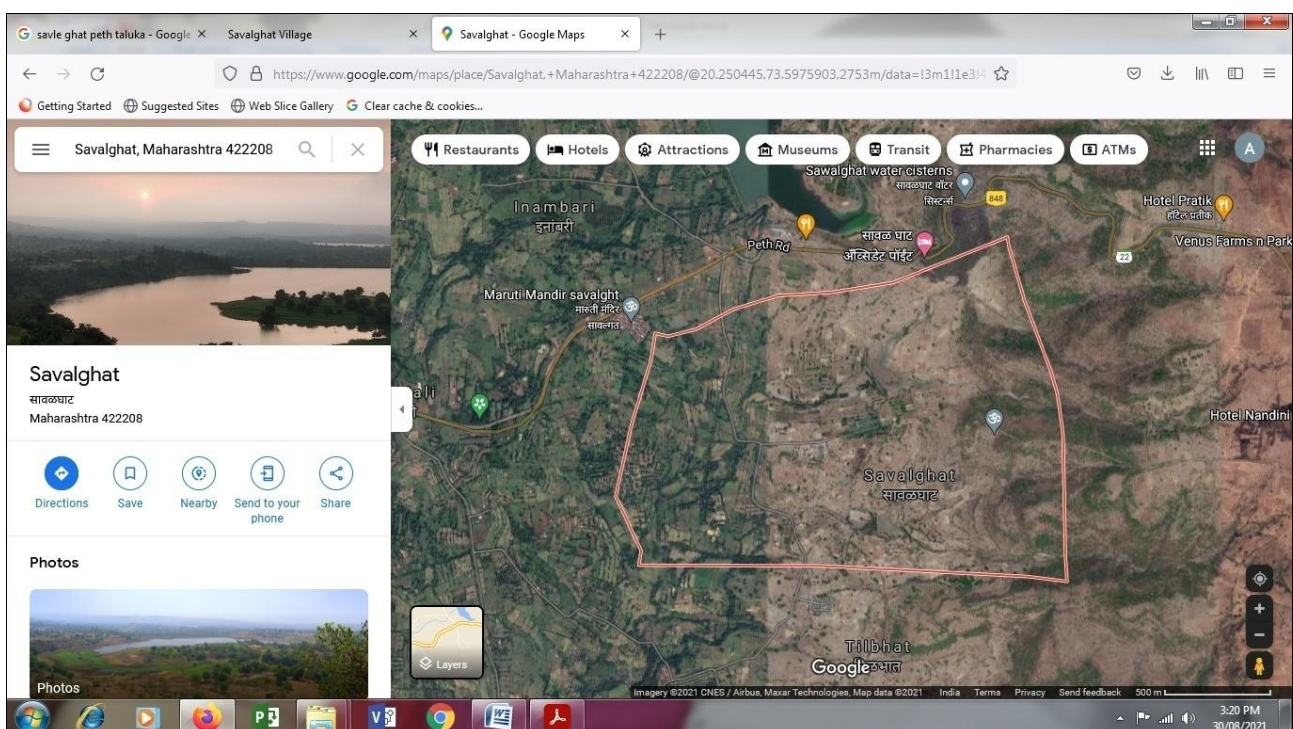


Table 1: Details Botanical Name, Common Names, Habit, Flowering Period and Colour, IUCN Status and Native distribution of Native *Vigna* species in Savalghat Region.

Sr. No	Botanical Name	Common Name	Habit	Flowering Period and colour	IUCN Status	Nativity Status
1	<i>Vigna silvestris</i> (Lukoki, Marechal & Otoul) Aitawade, K.V.Bhat & S.R.Yadav	Wild <i>Udid</i>	Small spreading	September and November Golden Yellow	Least Concern	Native range is a cultigen from Indian Subcontinent.
2	<i>Vigna stipulacea</i> (Lam.) Kuntz.	Mung bean	Small Herb	September and October Shiny Yellow	Least Concern	Throughout tropics and subtropics
3	<i>Vigna vexillata</i> (L.) A.Rich.	Halunda Janglee Mung	Slender climbers	August-September Purple or pink	Threatened Species	Throughout tropics and subtropics
4	<i>Vigna sublobata</i> (Roxb.) Babs & S.K.Sharma	Vel Mung	Climber	September and November Yellow	Least Concern	Native Range is India to Taiwan, N. & E. Australia.
5	<i>Vigna Khandalensis</i> (Santapau) Sundararagh. & Wadhwa.	Badmung	Herb or Undershrubs	September and October Yellow	Threatened Species	Native Range is India.

4. Acknowledgment

Author is grateful to Principal of MJM ACS College for providing laboratory facilities. Author is also thankful to Dr. Kamble sir for identification of the *Vigna* species.

5. References

- Jondhale AS, Chavan SP, Wagh BD. Ethnomedicinal survey of Peth tribal region of Nashik district in Maharashtra. *Inter J Res Bio Agri Technol*. 2018;2:177-181.
- Chavan S, Jondhale A. Exploration and documentation of some more wild edible food plants from tribal region of Peth Tehsil, Nashik district (Maharashtra), India. 2021;:360-366.
- Jondhale AS, Chavan SP. Utilization and primary survey of timber yielding plants in tribal region of Peth Taluka, Nashik, India. *International Journal of Pharma and Bio Sciences*. 2021;12(2):B17-B21. doi:10.22376/ijpbs.2021.12.2.b17-21.
- Jondhale AS, Patil MT. Ethnomedicinal survey of medicinal plants used for the treatment to cure diarrhoea and dysentery in Peth region of Nashik district. *International Journal of Research and Analytical Reviews*. [Year not specified];1:93-96.
- Bhat R, Karim AA. Exploring the nutritional potential of wild and underutilized legumes. *Compr Rev Food Sci Food Saf*. 2009;8:305-331.
- Pratap A, Malviya N, Gupta S, Tomar R, Pandey VR, Prajapati U. Field characterization of endemic wild *Vigna* accessions collected from biodiversity hotspots of India to identify promising genotypes for multiple agronomic and adaptive traits. *Legume Research*. 2018;41:490-499.
- Babu CR, Johri BM, Sharma SK. Leguminosae-Papilionoideae: Tribe-Phaseoleae. *Bull Bot Surv India*. 1985;27:1-28.
- Patil M, Jadhav R, Auti S. Nutritional studies of wild *Vigna* species from North Western Ghats of Maharashtra, India. *Bioinfolet*. 2020;17(3a):431-433.
- Padulosi S, Laghetti G, Ng NQ, Pienaar B, Perrino P. Survey of wild *Vigna* in southern Africa. *Plant Genet Resour Newsl*. 1991;83/84:5-8.
- Oyatomi O, Fatokun C, Boukar O, Abberton M, Ilori C. Screening wild *Vigna* species and cowpea (*Vigna unguiculata*) landraces for sources of resistance to *Striga gesnerioides*. In: Maxted N, Dulloo EM, Ford-Lloyd BV, editors. *Crop wild relative conservation and use*. CAB International; 2016. p. 27-31.
- Marconi E, Ruggeri S, Carnovale E. Chemical evaluation of wild under-exploited *Vigna* spp. seeds. *Food Chem*. 1997;59:203-212. [https://doi.org/10.1016/S0308-8146\(96\)00172-0](https://doi.org/10.1016/S0308-8146(96)00172-0)
- Lakshminarasimhan P, Sharma BD. Flora of Nasik District. Calcutta: Botanical Survey of India, Government of India; 1991. p. 644.
- Sharma BD, Karthikeyan S, Singh NP. Flora of Maharashtra State: Monocotyledons. Calcutta: Botanical Survey of India; 1996.
- Singh NP, Lakshminarasimhan P, Karthikeyan S, Prasanna PV. Flora of Maharashtra State: Dicotyledons. Calcutta: Botanical Survey of India; 2001.
- Chadburn H. *Vigna khandalensis*. The IUCN Red List of Threatened Species 2012: e.T19892969A20163711. <https://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T19892969A20163711.en>. Accessed 27 Sep 2021.
- Umdale SD, Chavan JJ, Ahire ML, Kshirsagar PR, Gaikwad NB, Bhat KV. *Vigna khandalensis* (Santapau) Raghavan et Wadhwa: a promising underutilized, wild, endemic legume of the Northern Western Ghats, India. *Genet Resour Crop Evol*. 2018;65:1795-1807.
- Tomooka N, Kaga A, Vaughan DA. The Asian *Vigna* (*Vigna* subgenus *Ceratotropis*) biodiversity and evolution. In: Sharma AK, Sharma A, editors. *Plant genome: biodiversity and evolution. Part C: Phanerogams (angiosperms-dicotyledons)*, vol 1. Enfield: Science Publishers; 2006. p. [pages needed].
- Tomooka N, Vaughan D, Moss H, Maxted N. The Asian *Vigna*: Genus *Vigna* subgenus *Ceratotropis* genetic resources. Dordrecht: Kluwer Academic Publishers; 2002. p. 270.
- Difo VH, Venkataramana PB, Ndakidemi PA, Matemua AO. Under-exploited wild *Vigna* species potentials in human and animal nutrition: a review. *Global Food Sec*. 2018;18:1-11.
- Gore PG, Tripathi K, Pratap A, Bhat KV, Umdale SD, Gupta V, Pandey A. Delineating taxonomic identity of two closely related *Vigna* species of section *Aconitifoliae*: *V. trilobata* (L.) Verdc. and *V. stipulacea* (Lam.) Kuntz in India. *Genet Resour Crop Evol*. 2019;66:1155-1165.
- Bisht IS, Bhat KV, Lakhnapau S, Latha M, Jayan PK, Biswas BK, Singh AK. Diversity and genetic resources of wild *Vigna* species in India. *Genet Resour Crop Evol*. 2005;52:53-68.