

The Guidelines for the NHCP Users



Division of Plant Exploration and Germplasm Collection
ICAR-National Bureau of Plant Genetic Resources
Pusa Campus, New Delhi - 110 012, INDIA



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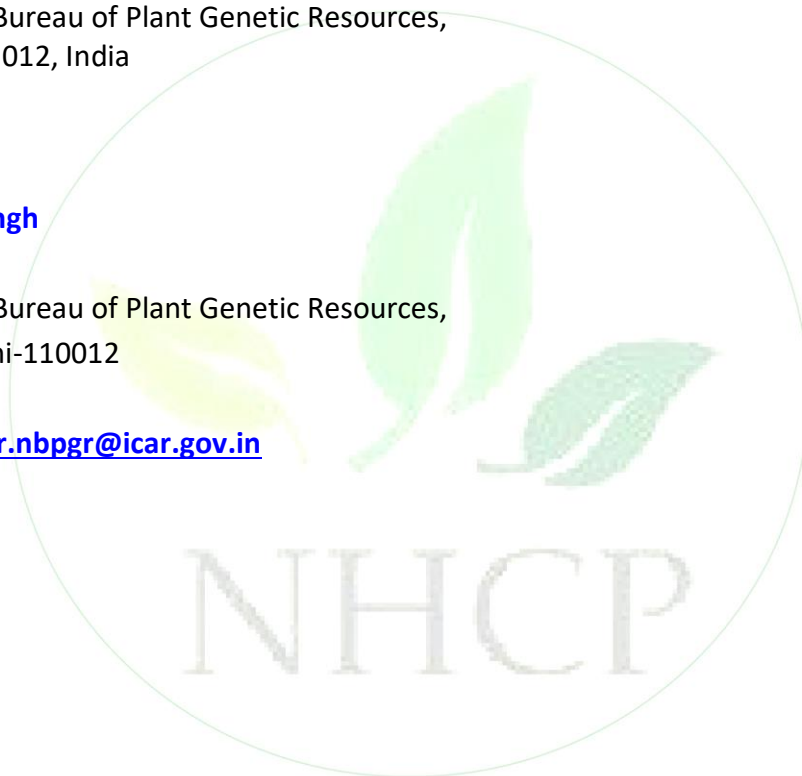
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About the guidelines -----

The National Herbarium of Cultivated Plants (NHCP) at Indian Council of Agricultural Research- National Bureau of Plant Genetic Resources (ICAR-NBPGR), New Delhi is THE only herbarium solely dedicated to cultivated plants in India and located in the old campus. The NHCP is actively engaged in the build-up, maintenance and collection of herbarium specimens of crop cultivars including landraces and less-known species, potential taxa related to PGR&FA and the crop wild relatives. The NHCP provides services to students, researchers and a number of indenters approaching this facility for various purposes from time to time. Besides, it is also disseminating the knowledge through web based on-line displays, and trainings/ hands-on-exercise to various users (<http://www.nbpgr.ernet.in:8080/nhcp/>). For easy referral and use of the state-of-the art facility, the guidelines are provided in this document. The indenters may go through the detailed guidelines and submit the **“mandatory proforma”** for the services provided by the NHCP.

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Authors

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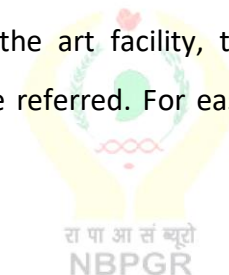
Introduction

The '**National Herbarium of Cultivated Plants**' (code-NHCP) is presently holding of 24,175 specimens representative of 267 families, 1,538 genera and 4,330 species (as on January 31, 2020). The NHCP is linked to the Index Herbariorum (Thiers 2016). Selected 7,000 herbarium sheets of different species/taxa are digitized with database and available on the herbarium website (<http://www.nbpg.ernet.in:8080/nhcp/>). Important taxa of plant genetic resource (PGR) relevance include over 500 crop taxa and ~700 species of crop wild relatives (CWR)/weedy relatives. Additionally, the collection maintained as seed, fruits, inflorescence and other carpological samples in the museum provides a reference collection of crop, wild and weedy plants.

The material build-up through specimens/ seeds collected during explorations undertaken in different agro-ecological zones of India, material introduced from abroad under various research and breeding programmes and also vouchers taken from systematic studies on crop-group(s) contribute towards build-up of holdings. Some important publications which have contributed as baseline for build-up of material in the NHCP include: the cultivated taxa (and variability within them) of crop/economic species (Ambasta et al. 1986; Nayar et al. 2003), wild relatives of major crop taxa (Arora and Nayar 1984; Pandey et al. 2005), wild edible plants of India and economic taxa (Arora and Pandey 1996) and the crop wild relatives of India (Pradeep et al., 2013).

System of the arrangement of the herbarium specimens in the NHCP differs from that of the other herbaria; here specimens are arranged by families, then by genera and then by species; all in alphabetical order. This was found more convenient for wide use by PGR workers, parobotanists, non-taxonomists and the beginners. For efficient access to the herbarium resources, documentation of the holdings as soft data, images in the virtual herbarium, Index Cards and inventory of digitised taxa can be referred. Facilities such as experimental net-house for conducting grow-out test for identification, raising plants vegetative propagules/seed material

for build-up, and PGR teaching programme are parts of the NHCP. In addition standardization of methodology for economic and eco-friendly deposition of herbarium, their processing in case of specialized group(s) such as landraces (for variation) and difficult group(s) (succulents, large-fruited types, aquatic plants, plants tending to detach leaves on drying, etc.) are a part of research on maintenance. For a glance through the state-of-the-art facility, the Website (<http://www.nbpgr.ernet.in:8080/nhcp/NHCP-Index.aspx>) may be referred. For ease in use of NHCP, guidelines are provided in the next section.



Guidelines

The request for availing services from the NHCP may be made by an individual(s)/ or a group(s) of individual(s) from an institution(s) after submitting a **“mandatory form”** (Annexure 1). This communication can be made preferably through a letter or e-mail sent to the curator (nbpgr.herbarium@icar.gov.in; nbpgr.exploration@icar.gov.in) mentioning about type of service desired, number of persons, intended purpose, tentative date and time (in case of visit/consultation/ training), and other related information(s). The request should be made well in advance (two weeks).

- Only after approval of the requested services from NHCP curator, the indenter should contact and wait for the confirmation of the curator (Annexure 1)
- In case of visit/consultation to the NHCP, the indenter should ensure to make entry in the ‘Visitor’s Register’ with the signatures on arrival. The indenter(s) may give suggestions in the register during visit or through e-mail. The **“Feedback Proforma”** is available with NHCP database [<http://www.nbpgr.ernet.in:8080/nhcp/contact.aspx>] for any suggestion on usefulness of the facility and the scope for improvement.

A. Consultation visit

- After depositing the mandatory form the indenter should wait for the approval by the curator. On arrival at the NHCP, he should check for the intended taxa available in herbarium using digital catalogue and /or index cards.
- Consult digital herbarium for the intended taxa and request curator for relevant herbarium folder(s) maintained in the storage compactors.
- Locate the family folders alphabetically categorized/arranged and trace the species of interest.
- Ensure to handle the herbarium specimen(s) carefully and handover the consulted material to the curator after use. **‘Determinavit slip’** is available in the

herbarium for notes or confirmation/authentication of identity of specimens checked or studied by the users. Put 'Determinavit slip' or notes if user is sure of any discrepancy in taxonomic identity. Any additional input on the taxa may also be recorded on the space available on the herbarium specimen mounting sheet. Leave the consulted specimens in the table itself.

- **Consultation of 'Type' specimen** is permitted only after prior permission from the curator, and is to be handled with utmost care. 'Type' specimen consultation is **not permitted** to the general visitors.
- For clicking the photograph(s) or material of interest, the indenter may kindly deposit the proforma (Annexure 2).

B. Specimen identification/authentication and/ or issuance of authentication certificate

- After depositing the mandatory form along with the image of the specimen or sample for which **Authentication Certificate (AC)** is desired (nbpgr.herbarium@icar.gov.in; nbpgr.exploration@icar.gov.in), the indenter has to wait for the approval from the Curator, NHCP and instructions to deposit the **processing fee**.
- Indenter will deposit complete herbarium specimen along with copy of approval by NHCP, copy of the fee remittance (hard or soft), a letter of request issued from the parent/affiliating institute with detailed information on name of the indenter, date of specimen collection, type of material, source locality/ habitat, plant part used in study, proposed study (thrust area), etc. for which AC is desired.
- Deposit completely processed herbarium specimen (mounted on the board/ or place inside newspaper/blotters; delivery by post/by hand) along with flowers and/or fruits and/ or other identifiable parts (product, etc.).
- Incomplete sample(s) deposited as raw material/ plant products/ or part of the material- leaf, bark, stem sample(s) are not acceptable for issuance of AC.

Processing fee structure and method of payment

- Prior approval of the curator is essential to pay the fee for issue of the Authenticated Certificate (AC).
- For issue of the **Authentication Certificate (AC)**, the indenter has to pay a sum of **Rs. 500/- (Rs. Five hundred only) per specimen charged as processing fee from the students/researchers belonging to public and private institutions**. However, **Rs 500/- (Rs Five hundred only) and 1,000/- (Rs One thousand only)** are charged from public and private organizations, respectively.
- The copy of the receipt of payment made towards AC should be provided to the Curator, NHCP along with the herbarium specimen in order to process the same.
- In case of more than one specimen, the separate request is to be made.
- **How to pay fee:** on getting the approval of curator to deposit fee for AC, the payment should be made online in the following account- **Account name: Director-NBPGR; Bank: The Syndicate Bank; account type: Current A/C; Branch Name: NSC Beej Bhawan; Locality Postal address: Syndicate Bank, Near NSC Beej Bhawan, Pusa, New */Delhi 110012; IFSC code- SYNB0009121; MICR code: 110025088; Account No. 91213050000016** with narration-“*Fee for Authentication*”. It can also be paid through credit/debit card and transaction details communicated via e-mail(nbpgr.herbarium@icar.gov.in; nbpgr.exploration@icar.gov.in).
- **Processing time** for issuance of AC is **15 days** (after depositing processing fee and herbarium specimen). Provide two e-mail accounts for dispatch of the AC and for further correspondence.

C. Visit to the NHCP

- After depositing the mandatory form, the visitors should wait for the approval of the Curator, NHCP.

- Date and arrival, time and duration of visit, details of the visitors (college/school; research organization, others-farmer, NGO, etc.) and number of team members should be clearly indicated to facilitate for necessary arrangements.
- The date and time of visit should be fixed only after the approval and confirmation made through enquiry (e-mail/ phone) from the Curator, NHCP.

D. Training/technical know-how on herbarium procedures

- Training is imparted for technical know-how on basic herbarium procedures through visual media or demonstrations mainly for the school and college students.
- Deposit mandatory form (Annexure 1) requesting for tentative date/ time conveyed for arranging the trainings. The visit should be made only after approval by the curator, NHCP.
- The NHCP does not provide certificate for imparting any training/technical know-how on herbarium procedures and such events are need based.

E. Depositing voucher herbarium specimen(s)

- A well prepared standard herbarium specimens representing all parts especially flowers, or fruits or both are accepted as “*Vouchers*” for deposition in the NHCP (refer link on web). Vouchers may be submitted here without mounting (use newspaper/blotter) and list of specimens along with all details.
- Specimens should be well-labeled with complete details on collection date, associated flora, locality and habitat features; field notes should be clearly recorded. Economic products such as fruits, dried flowers, fibres, gums, etc. may also be additionally provided.
- Characters of the plant which are lost on drying, or which may not be represented in the herbarium specimen (height of plant for trees or shrubs), flower colour,

leaflets (which may be shed on drying) should be noted on the herbarium record sheet/label data.

- Fully dried specimens should be dispatched into bundles (of 30-35 specimens/bundle) in between thick sheets of cardboard and tied tightly prior to transportation. In the event of specimens not being completely dry (even after 3-4 changes), extra corrugated sheets may be placed between specimens till they are brought to the destination. The herbarium specimen may be labelled as 'Voucher Specimen'; "Fragile Material"; "Handled Carefully"
- Fruits, seed samples and economic products, which may often be large and bulky, could be dried and sent separately.
- For preparation and deposition of herbarium samples of "difficult-to-process" type such as diversity in cultivars, large specimens: rhizomatous/tuberous/bulbous types; aquatic plants; fleshy material (stem/flowers, leaves) photo of the whole plant should accompany to aid identification.
- The 'fragile' material should preferably be brought personally (and not despatched through post/courier) to ensure proper handling. For dispatch through postage, label should be put as 'fragile material'.

F. Photography of the herbarium specimen(s)

- While studying in the herbarium if indenter intends to take the photographs or images of the herbarium specimens, he/she should seek approval of the authorities/ curator by filling the proforma (Annexure2). Photographs/scans of the herbarium specimen(s) are presently not supplied on request.
- After the approval, the indenter should submit filled form (Annexure 2) along with the list of taxa to be photographed.

- While photography, indenter should select and handle the herbarium specimen(s) with utmost care not to damage/spoil them
- The use of herbarium specimens' images supplied by the NBPGR-NHCP are subject to the terms and conditions specified (Annexure2).



Proforma to be filled for availing facility at the National Herbarium for Cultivated Plants (NHCP), ICAR-National Bureau of Plant Genetic Resources, New Delhi, India (mandatory)

Name of the indenter: Dr/Mr/Sh/Ms

Gender:

Designation:

Status of affiliating body: Govt./Pvt./Semi-govt./others

Name of the affiliating institute:-----

Intend of use of the facility: Visit/ Consultation/ Authentication/ Depositing voucher/ Identification/
Training/ Technical know-how

Mode of request for availing service: Email/ Letter/ Telephonic communication

Number of visiting person: Single or group (applicable for visit/consultation/training)

Tentative date of visit:

Fee paid: Yes/No (applicable only for issue of authentication certificate)

If yes, details of payment: mode of payment, date of payment, receipt number, etc. (attach copy of receipt)

Signature: -----

(Indenter)

Place: -----

Date:-----

For official use

Approval accorded to Dr/Mr/Sh/Ms-----

from (affiliation) ----- to visit on

----- (DD/MM/YYYY)----- (time)----- AM/PM

(Signature)

Curator NHCP

**Proforma to be filled by the indenter for photography of the herbarium specimen(s)
National Herbarium for Cultivated Plants (NHCP), ICAR-NBPGR, New Delhi, India**

© Copyright Declaration

Name of the indenter: Dr/Mr/Sh/Ms

Gender:

Designation:

Affiliation:



Complete postal address -----

Brief description of herbarium specimens to be photographed (attach extra sheets if required)
(Species name; collector no.; herbarium no.)

1. In consideration of the NHCP, ICAR-National Bureau of Plant Genetic Resources granting me the right to take photographs of the herbarium specimen(s), I assign with full title guarantee to NHCP copyright © and publication right in all photographic images that I make of the herbarium specimen(s).
2. I have assigned the copyright to ICAR-National Bureau of Plant Genetic Resources, New Delhi and agree that I may use the images only for non-commercial, scientific and educational purposes.
3. I understand that should I wish to reproduce the images in any publication(s), I must obtain permission from the Director, ICAR-NBPGR, New Delhi prior to the publication of any image(s). I will also acknowledge the source of the images with the words "by permission of the Director, ICAR-NBPGR".
4. I understand that I shall duly acknowledge the Director, ICAR-NBPGR in all published work(s) resulting from use of the images and data.
5. I agree to provide information of intended use of this/these image(s) and a copy of the eventual published work, if required to the NHCP-NBPGR.

Signature: -----

(Indenter)

Place: -----

Date:-----



Website: www.nbpgr.ernet.in

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