



Garcinia indica : INGR: 04063 *G. cambogia* : INGR: 04061 Ornamental okra: INGR: 16036

5. Lesser galangal (*Alpinia calcarata*) (INGR: 09051/2009) - IC210421, high 1,8–cineole (13.2–30.2%); a-fenchyl acetate (26.3–38.7%).
6. Black pepper (*Piper nigrum*) (INGR: 10065/2010) - IC266417, unique oval shaped berries.
7. French bean (*Phaseolus vulgaris*) (INGR: 10026/2010) - pole type with long pods (13–25 cm) and dual purpose (vegetable as well as pulse).
8. Ornamental okra (INGR: 16036/2017) - IC599974, F₁ hybrid of musk mallow (*Abelmoschus moschatus* subsp. *moschatus* x *A. moschatus* subsp. *tuberosus*) an ornamental plant with perennation and bright red flower.



Alpinia galanga: INGR: 08107 *A. calcarata* : INGR: 09051 *Piper nigrum* : INGR: 10065

Field Days and Biodiversity Fairs: Conduct of field days for showcasing the diversity/variability in the germplasm holdings is a regular event and 18 field days were conducted so far. As a part of PGR awareness generation, 4 biodiversity fairs and 7 grass-root level trainings for farmers were conducted. Our scientists/ technical staff have participated in six exhibitions organized by Malabar Botanic Garden, Kerala Agricultural University, Kerala State Biodiversity Board, Farm Information Bureau, Kerala Science Congress, etc. exposing PGR activities of the station to the public.



Vividha Expo organized by KSBB at Thiruvananthapuram Pavilion in the Thrissur Pooram Exhibition

Publications: A total of 377 research publications including 149 Research papers, 104 Seminar/ Symposium papers, 26 Book chapters, 17 Books/Booklets, 7 Catalogues/ Scientific Monographs, 11 Technical Bulletins and 63 Popular Articles were brought out.



Germplasm Field Day



Grass-root Level Training - Kannur

Interesting crop wild relatives maintained

Abelmoschus

A. angulosus
A. crinitus
A. enbeeppegarensis
A. ficulneus
A. moschatus subsp. *moschatus*
A. moschatus subsp. *rugosus*
A. moschatus subsp. *tuberosus*
A. tetraphyllus
A. tuberculatus

Aloe

A. arborescens
A. saponaria

Amorphophallus

A. bulbifer
A. commutatus
A. hirsutus
A. muelleri
A. paeoniifolius var. *paeoniifolius*

Artocarpus

A. chaplasha
A. gomezianus subsp. *zeylanicus*
A. lacoocha

Cinnamomum

C. bejalghotta
C. goensis
C. malabatum
C. sulphuratum
C. verum
C. wightii

Cucumis

C. callosus
C. hystrix
C. indicus
C. melo var. *agrestis*
C. muriculatus
C. prophetarum
C. sativus var. *hardwickii*
C. silentvalleyi

Curcuma

C. aerugenosa
C. amada var. *amada*
C. amada var. *glabra*
C. amarissima
C. aromatica
C. aurantiaca
C. brag
C. caesia
C. comosa
C. ferruginea
C. haritha
C. latifolia
C. leucorrhiza
C. mangga

C. montana
C. raktakanta
C. rubescens
C. soloensis
C. zanthorrhiza

Dioscorea

D. belophylla
D. floribunda
D. glabra
D. hamiltonii
D. hispida
D. intermedia
D. oppositifolia
D. pentaphylla
D. piscatorum
D. spicata
D. tomentosa
D. wallichii
D. wightii

Garcinia

G. dhanikariensis
G. dulcis
G. hombroniana
G. livingstonei
G. nervosa
G. xanthochymus

Mangifera

M. andamanica
M. camptosperma
M. griffithii

Momordica

M. balsamina
M. charantia var. *muricata*
M. cochinchinensis
M. dioica
M. sahyadrica
M. subangulata subsp. *renigera*

Musa

M. acuminata
M. indandamanensis
M. pushpanjalie

Oryza

O. officinalis
O. rufipogon
O. sativa f. *spontanea*

Piper

P. arboreum
P. argyrophyllum
P. attenuatum
P. chaba
P. hymenophyllum
P. longum
P. pedicellulosum
P. sarmentosum

P. trichostachyon
P. wallichii

Sesamum

S. alatum
S. malabaricum
S. prostratum
S. radiatum

Solanum

S. aculeatissimum
S. aethiopicum
S. anguivi
S. exarmatum
S. incanum
S. insanum
S. macrocarpon
S. nigrum
S. spirale
S. surattense
S. torvum
S. trilobatum
S. viarum
S. virginicum

Trichosanthes

T. bracteata
T. cucumerina
T. lobata
T. nervifolia
T. tricuspidata

Vigna

V. adenanthus
V. angularis var. *nipponensis*
V. dalzelliana
V. glabrescens
V. hainiana
V. khandalensis
V. konkanensis
V. luteola
V. minima
V. pilosa
V. radiata var. *setulosa*
V. sublobata
V. sylvestris
V. stipulacea
V. trilobata
V. trinervia var. *trinervia*
V. trinervia var. *bourneae*
V. vexillata
V. wightii

Zingiber

Z. cassumunar
Z. rubens
Z. squarrosus
Z. zerumbet

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OUR GOAL : AGROBIODIVERSITY CONSERVATION FOR POSTERITY



Laboratory cum Office Building

Located within the Kerala Agricultural University campus near Fruit Crops Research Station on the Mannuthy-Chirakkakode Road.

Plant Genetic Resources Programme: Augmentation, Characterisation, Evaluation, Maintenance, Regeneration, Conservation, Documentation and Distribution of Plant Genetic Resources in Southern India including Goa and Andaman & Nicobar Islands

- ❖ Plant Exploration and Germplasm Collection
- ❖ Augmentation and Acclimatization of Crops New to the Region
- ❖ Characterisation, Evaluation and Documentation
- ❖ Regeneration, Maintenance and Conservation
- ❖ Germplasm supply to user agencies under Material Transfer Agreement (MTA)

New crops (bitter-less gourds) popularised among farmers



Teasel gourd (*Momordica subangulata* subsp. *renigera*)



Spine gourd (*Momordica dioica*)



Sweet gourd (*Momordica cochinchinensis*)

SALIENT ACHIEVEMENTS

Exploration and Collection

- ♦ From 1978 to 2018, a total of 29,690 accessions collected in 244 missions from A&N Islands (887 samples), Andhra Pradesh (146), Arunachal Pradesh (60), Assam (203), Goa (237), Gujarat (71), Karnataka (4462), Kerala (14553), Lakshadweep (106), Madhya Pradesh (117), Maharashtra (94), Mizoram (156), Nagaland (177), Puducherry (16), Sikkim (29), Tamil Nadu (8125), Tripura (101), West Bengal (34) and Nepal (105 samples).



Exploration Missions: (1) Lakshadweep Islands (2) Western Ghats (3) Nicobar Island

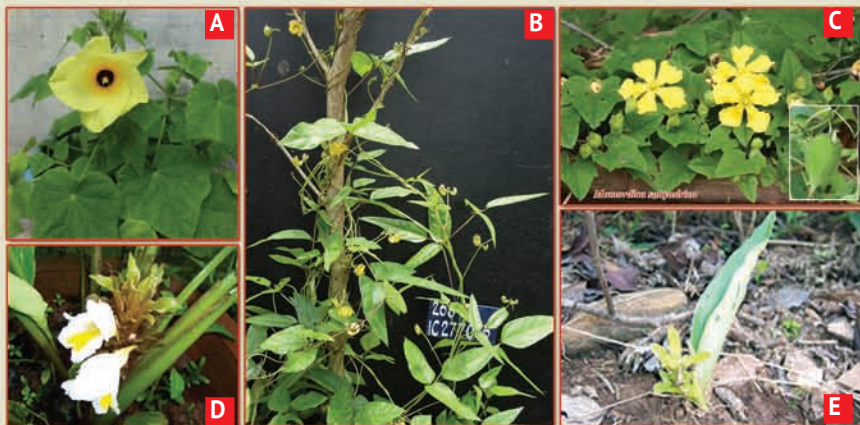
- ◆ Maintains a Medium-term Seed Store with 10000 accessions and Regional Herbarium of Cultivated Plants with 2803 specimens in 600 species.



Species diversity in *Trichosanthes*

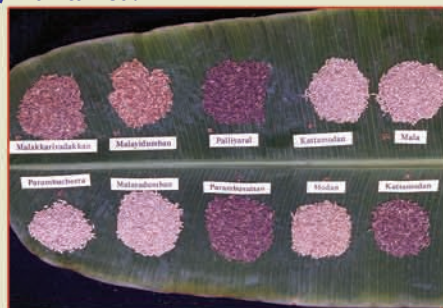
Species diversity in *Solanum*

New Taxa Described/ New Reports: Six taxa new to science namely, *Abelmoschus enbeepeegearensis* (A), *Vigna konkanensis* (B), *Momordica sahyadrica* (C), *Curcuma karnatakensis* (D), *C. kudagensis* (E) and *Piper velayudhani* have been described. New reports of extended distribution of the species *Curcuma albiflora*, *C. oligantha*, *Dioscorea piscatorum*, *Vigna dalzelliana* and *Ziziphus subquenervia* were made from the Western Ghats/ Andaman & Nicobar Islands.



Unique germplasm accessions collected/ maintained:

- Saline tolerant/ Pokkali rice – *Anakkodan*, *Pokkali*, *Orkaima*, *Ormundakan*, etc. (37 landraces)
- Upland direct seeded rice – *Keerippallan*, *Erinellu*, *Ambaladan*, *Bhoothakali*, *Karakkozhivalan*, etc. (42 landraces)
- Variability in cultivated bitter gourd, and wild and semi-domesticated bitter gourds: *Rudrakshahagali*, *Methippavai*, *Karandakappaval*, etc. (81 landraces)
- Poly-embryonic mango landraces – *Muvandan*, *Vattan*, *Tholikaipan*, *Kotturkonam*, *Puliyen*, *Kilichundan*, *Kochukilichundan*, *Priour*, *Kolambu*, *Vellari*, *Nambiar Manga*, *Chandrakaran*, etc. (101 accs.)
- Medicinal ash gourd – *Neykumbalam* and collections from North East India
- Variability in Chinese spinach (220 accs.) - multi-cut leafy amaranth, dual purpose vegetable cum ornamental, late flowering type, small leaf bushy type (*Aarakeera*), green and magenta red leaved amaranth



Variability in rice landraces of Kerala

- Cucumber – Carotenoid rich accessions
- Sweet gourd (*Momordica cochinchinensis*) and Teasel gourd (*Momordica subangulata* subsp. *renigera*) from A&N Islands – potential vegetables
- Kokum (*Garcinia indica*) - a potential tree-borne oil seed and multi-purpose fruit (54 accs.)
- Malabar tamarind (*Garcinia cambogia*) – a potential condiment/ raw material for pharmaceutical industry (145 accs.)
- Medicinal & aromatic plants - 394 accessions in 147 species
- Crop wild relatives in *Abelmoschus* (156 accs./9 spp.), *Amorphophallus* (19/6), *Artocarpus* (5/3), *Cucumis* (43/8), *Curcuma* (71/19), *Dioscorea* (106/13), *Garcinia* (25/6), *Mangifera* (7/3), *Momordica* (89/6), *Moringa* (1/1), *Myristica* (5/2), *Oryza* (41/3), *Piper* (61/10), *Sesamum* (64/4), *Solanum* (153/14), *Trichosanthes* (26/3), *Vigna* (307/19) and *Zingiber* (10 accs./4 spp.).



Variability in Leafy Amaranth



Carotenoid rich cucumber

Semidomesticated bitter gourd "Rudrakshahagali"



Fruit variability in Malabar Tamarind

Characterisation and Evaluation

So far, 4052 accessions of field crops, 1463 of horticultural crops and 293 accessions of wild relatives of crop plants were characterised, and 197 accessions of okra and seven of taro were studied under multi-location evaluation.

Popularization of potential crops

Non-bitter type of *Aloe vera* (IC333202), dwarf Burmese fish tail palm (*Caryota mitis*) collected from Andaman Islands, Chop-chopa (*Garcinia kydia*) - a good monsoon season fruit, Sweet gourd (*Momordica cochinchinensis*) and Teasel gourd (*M. subangulata* subsp. *renigera*) were popularised among farmers/ tribals as potential vegetables/ economic plants for food and livelihood security.



Bitterless *Aloe vera*

Burmese fish-tail palm (*Caryota mitis*)

Chop-chopa (*Garcinia kydia*)

Germplasm Conservation: A total of 8306 accessions comprising 74 crops and their wild relatives (140 species in 23 genera) and other economic plants (173 species) are maintained (in field gene bank and medium term storage) and 18680 accessions were sent to National Gene Bank for long-term storage.



Fruit variability in Cucumber

Fruit variability in Okra



Fruit variability in Snake gourd

Fruit variability in Pumpkin

Germplasm transfer to crop-based institutes: In all, 2044 accessions of different perennial horticultural crops were transferred to crop-based institutes such as CISH, Lucknow, UP (67); CTCRI, Thiruvananthapuram (1097); IIHR, Bengaluru (28); IISR, Kozhikode (556); DMAPR, Anand (5) and NRCB, Tiruchirapalli (291).

Supply to user agencies: Under material transfer agreement (MTA), supplied 24,156 accessions to various user agencies comprising ICAR institutes (6,670), SAUs (14,369) and other institutions (3,117).

Supply for multi-location evaluation: Supplied 1300 accessions comprising 800 of horsegram to three institutions under the National Network Research Project on Arid Legumes and 500 of okra to Indian Institute of Vegetable Research, Varanasi under the All India Co-ordinated Research Project on Vegetable Crops.



Medium-term Seed Storage Facility

Digitized map showing the regions explored for collection of PGR

Regional Herbarium

Varieties released using our germplasm

Kerala Agricultural University (KAU) has released seven varieties using germplasm from NBPGR, Thrissur.

- **Brinjal (*Solanum melongena*): "Neelima"**, an F₁ hybrid between 'Surya' x NIC014090, having high yield potential and resistance to bacterial wilt.
- **Chinese potato (*Plectranthus rotundifolius*): "Nidhi"** was developed through clonal selection from IC085708. This variety has high yield potential, large tubers, good cooking quality and is suitable as a short duration vegetable crop in Kerala, parts of Tamil Nadu, Karnataka and Goa.
- **Greater yam (*Dioscorea alata*): "Indu"**, clonal selection from IC44209, is a shade tolerant variety with eight months duration.
- **Okra (*Abelmoschus esculentus*): "Salkeerthi"**, a re-selection from IC470862, having high yield potential and attractive long light-green fruits. "**Aruna**", a pure line selection from IC218870, which has high yield potential, attractive red colour and long fruits rich in anthocyanins. "**Manjima**" is a hybrid between Gowreesapattom Local x IC282257, a high-yielding (1.34 kg/plant), compact and early maturing variety having field resistance to YVMV.
- **Yard-long Bean (*Vigna unguiculata* subsp. *sesquipedalis*): "Kairali"**, a pure line selection from IC045415, has field resistance to Mosaic disease.

Registration of Genetic Stocks

Based on the evaluation / characterisation of germplasm, eight accessions with unique traits were registered by the Plant Germplasm Registration Committee of ICAR.

1. Malabar tamarind (*Garcinia cambogia*) (INGR: 04061/2004) - IC244100-2, early bearing with higher fruit number (1496); high fresh fruit yield (104.2 kg/tree).
2. Malabar tamarind (*Garcinia cambogia*) (INGR: 04062/2004) - IC244111-1 early bearing, with higher fruit number (1470), high fresh fruit yield (99.3 kg/tree).
3. Kokum (*Garcinia indica*) (INGR: 04063/2004) - IC136687-3, higher number of fruits (3267/year), high fruit yield (47.9 kg/year), with a TSS value of 20%.
4. Greater galangal (*Alpinia galanga*) (INGR: 08107/2008) - IC349746 contain high 1,8-cineole (72.49%); a-pinene (5.54%); a-terpineole (3.82%) and a-terpinene-4-ol (2.35%).