TECHNICAL PROGRAMME 2013 - 14

I. Collection, Conservation, Cataloguing and evaluation of Genetic resources of tuber crops

Exploring the biodiversity in tropical tuber crops from the unexplored areas in the different regions for collecting germplasm having unique character genes for quantitative and qualitative traits, particularly for high yield and tolerance/resistance to biotic and abiotic stress.

Centres: All participating Centres

II. Testing of genetic resources at various agro climatic environments

II.1.Cassava

II.1.1. IET on short duration cassava varieties (2012) (2nd Yr)

Centres: Thiruvananthapuram, Yethapur, VR Gudem

Entries: TCa12-1,TCa12-2, TCa12-3, TCa12-4, TCa12-5, TCa12-6, TCa12-7, TCa12-8, TCa12-9, TCa12-10, Sree Jaya, Local

II.1.2. IET on cassava for culinary use (2013) (1st Yr)

Centres: Thiruvananthapuram, Imphal & Jagdalpur

Entries: TCa 13-1, TCa 13-2, TCa 13-3, TCa 13-4, TCa 13-5, Sree Vijaya and M 4 (control)

II.1.3. URT on short duration cassava varieties (2009) (2nd Yr)

Centres: Imphal

Entries: CI-848, CI- 850, Sree Jaya, Local

II.1.4. URT on Cassava mosaic resistant varieties (2011) (1st Yr)

Centres: Dapoli, Yethapur, Thiruvananthapuram & VR Gudem

Entries : Sree Padmanabha, PDP- 9, TCMS -2, TCMS -9, TCMS -4, TCMS-7, TCMS-10, TCMS-1,TCMS-6, TCMS-5, local

II. 1.5. MLT on Cassava (2007) (2nd Yr)

Centres:VR Gudem,Yethapur, & Thiruvananthapuram

Entries : Ci-800, CI- 823, PDP- 1, Me- 833, H-226, Local

II.2.Sweet potato

II.2.1. Improvement through poly cross method of breeding for making site specific selections of sweet potato

Centres: Jagdalpur, Bhubaneswar, Dholi, Kalyani

II.2.2. IET on sweet potato for weevil resistance (2012) (1st Yr)

Centres: Bhubaneswar, Thiruvananthapuram, Kalyani, Dholi, Rajendra Nagar

Entries: TSp12-1, TSp12-2, TSp12-3, TSp12-4, TSp12-5, TSp12-6, TSp12-7,Kishan, Local

II. 2.3. IET on sweet potato (2012) (1st Yr)

Centres: Kalyani, Barapani & Dharwad

Entries: TSp12-4, TSp12-5, TSp12-6, TSp12-7, TSp12-8, TSp12-9, TSp12-10, Sree Bhadra, Local

II.2.4. URT on orange fleshed sweet potato(2009) (2nd Yr)

Centres:Dharwad,Navasari,Udaipur

Dharwad : Kamal Sundari, S- 1281, Konkan Aswini, CIP-SWA, 440038, 440127

Navsari : 362-7, CIP SWA-2, 440038, 440127, ST-14, Kamalasundari, Gouri

Udaipur: SV-98, 440127, ST-14, 440038, Kamalasundari, IGSP C-15, Gouri

II. 2.5. URT on Sweet potato (2nd Yr)

Centres : Port Blair

Entries : CARI SP-1, CARI SP-2, SV-71, S-1-60 , Local

II.2.6. MLT on sweet potato (2007) (2nd Yr)

Centres: Dholi,Udaipur,Imphal,

Entries : S-1-60, SV-71, CARI SP-1, CARI SP-2, Sree Bhadra, Local

II.2.7. MLT on orange fleshed sweet potato (2nd Yr)

Centres: Imphal, Faizabad

Imphal : SV-362, CIPSWA-2, NFSP-1, Gouri

II.2.8. MLT on sweet potato (2nd Yr)

Centres: Navasari, Bhubaneswar, Rajendranagar

Entries : Co- 3-4, S 1-60, ST-10, C-71, Sree Bhadra

II. 2.9. MLT on orange fleshed sweet potato (2nd yr)

Centres: Jorhat

II.3.Yams

II.3.1. IET on greater yam

Centres: Imphal, Jorhat

Entries: NAU Da-1, IGDA-2, NAU Da-2, Da-199, Da-68, Da-11, Da-25, IGDa-4, Local

II. 3.2.IET on greater yam (2012) (2nd Yr)

Centre: Trivandrum, Bhubaneshwar, Jagdalpur, Kovvur & Udaipur

Entries: TGy12-1, TGy12-2, TGy12-3, TGy12-4, TGy12-5, TGy12-6, TGy12-7, TGy12-8, TGy 12-9 , Sree Karthika, Local

II. 3.3. IET on *Diascorea Bulbifera* (2013) (1st Yr)(IET Db-13)

Centre : Jagdalpur, Ranchi, Dapoli

Entries : TDb 13 -1, TDb 13 -2, TDb 13 -3, TDb 13 -4, TDb 13 -5, TDb 13 -6, TDb 13 -7, TDb 13 -8 TDb 13 -9 and TDb 13 -10, Local

II.3.4. URT on greater yam (2nd Yr)

Centres: Navasari,,Jagdalpur,Jorhat

Navasari: IGDa-2, IGDa-3, IGDa-4, Da-25, Sree Karthika, NAU Da-1 (R), TRC

Jagdalpur: IGDa-2, IGDa-3, IGDa-4, Da-25, Sree Karthika, Sree Rupa

Jorhat : Da-199, TRCDa, Da-25, AAU Da-8, AAUDa-17, IGDa-2, IGDa-3, IGDa-4

II.3.5. MLT on lesser yam

Centres: Jorhat,Ranchi,Thiruvananthapuram

Entries: : RAU-2, De-17, De-96, Sree Latha, Local

II. 4.Colocasia

II. 4.1. IET on *Colocasia* (2012) (1st Yr)

Centres:Kalyani, Barapani, Dholi, Ranchi, Coimbatore & Port Blair

Entries: TTr12-1, TTr12-2, TTr12-3, TTr 2-4, TTr12-5, TTr12-6, TTr12-7, TTr12-8, TTr12-9, TTr 12-10, TTr12-11, TTr12-12,Mukthakesi, Local

II. 4. 2. IET on Swamp Taro (2013) (1st Yr)

Centres: Jorhat, Kalyani

Entries: 3 entries from Jorhat & 5 entries from Kalyani, Local

II.4.2.URT on *Colocasia* (Bunda) (2nd Yr)

Centres: Jagdalpur,Kalyani

Kalyani: BCB-1, BCB-2, IGB-1,IGB-2, IGB-3, IGB-5, NDB-3

Jagdalpur : IGB-6, IGB-3,IGB-5,NDB-9,NDB-3(check)

II. 4.3. MLT on *Colocasia* (Taro) (2nd Yr)

Centres: Jagdalpur, Dholi ,Barapani

Entries: AAU Col- 46, IGCOL.E-9, ML-2, Sree Reshmi, Local

II.4.4.MLT on *Colocasia* (2nd yr)

Centres: Rajendranagar, Faizabad, Dholi with entries from Rajendranagar

Entries: RNCA-1, Sathamuki, KCS -3, Local

II.5.Elephant foot yam

II.5.1. IET on *Amorphophallus* (Planting may be done during Feb **2014**)

Centres: Navasari, Trivandrum & Udaipur

Entries: TEy12-1, TEy12-2, TEy12-3, TEy12-4, TEy12-5, TEy12-6, TEy12-7, TEy12-8, TEy12-9, TEy12-10, Sree Padma & Gajendra

II. 5.2. MLT on elephant foot yam (2nd yr)

Centres: Kalyani, Kovvur, Coimbatore, Jagdalpur

Entries : BCA-3, Appakkudal local, Gajendra and AC-14

II. 6.Yam bean

II. 6.1. Improvement programme on yam bean through breeding

Centres: Bhubaneswar, Dholi, Kalyani

II. 6.2. MLT on Yam bean

Centres: Kalayani, Ranchi, Bhubaneswar with entries from Kalyani

Entries : BCYB-1, DPH-5, DPH-78, RM-1, Local

II.7. Collection and conservation of minor tuber crops available in the respective location of the centres

Centres: All centres

III. Agro techniques

III.1.Cassava

III.1.1.Use of Cassava leaves for eri silk worm rearing for production of eri silk/Ahimsa silk

Centres: Jorhat

III. 1.2.Standardization of fertigation through micro irrigation for cassava

Centre: Yethapur

III. 2. Elephant foot yam

III. 2.1. Effect of INM on yield and quality/acridity of elephant foot yam

Centres: Jorhat

III.3. Cropping systems involving tuber crops

III.3.1. Intercropping tuber crops in sapota/amla/mango orchards

Centres: Dharwad,

III. 3.2. Identification of suitable intercrops in taro/arvi

Centres: Jagdalpur, Imphal, Udaipur

III.4. Study on Phenology of tuber crops in different agro=climatic zones

III.4.1.Cassava

Centres: Thiruvananthapuram, Yethapur, Navasari, Port Blair, Imphal, Dapoli, VR Gudem

Varieties: 2 (H-226, Sree Vijaya)

III.4.2. Sweet Potato

Centres: Dholi, Ranchi, Baghalkot, Hyderabad, Kalyani, Faizabad, Jagdalpur, Udaipur, Bhubaneswar

Varieties: 2 (Sree Bhadra & local)

III.4.3. Elephant foot yam

Centres:

Thiruvananthapuram,Dholi,Ranchi,Navasari,Baghalkot,Kovvur,Coimbatore, Kalyani, Faizabad, Bhubaneswar

Varieties: 2 (Gajendra, local)

III. 4.4.Taro

Centres: Thiruvananthapuram,Coimbatore, Rajendranagar, Kalyani, Faizabad, Port Blair, Barapani, Imphal, Jorhat

Varieties: 2 (Mukthakeshi & local)

III.4.5.Greater yam

Centres:Thiruvananthapuram, Jagdalpur, Jorhat, Kovvur

Varieties: 2 (Sree Keerthi & local)

III.5.Site specific nutrient management studies

III.5.1..Cassava

Centres: Yethapur & VR Gudem

Variety : Sree Vijaya

III.5.2. Elephant foot yam

Centres: Coimbatore, Dholi, Kovvur, Kalayani & Navasari

Variety: Gajendra

Treatments:

1) Recommended dose of NPK as per CTCRI package
2) Nutrients based on soil test data
3) Zero N , P and K based on soil test
4) Zero P, N and K based on soil test
5) Zero K, N and P based on soil test
6) No added fertilizers

III.6. Farming system studies in NE region and tribal areas

Centres: Ranchi, Odisha, Chattisgarh, Jorhat, Barapani, Imphal

IV. PESTS AND DISEASE MANAGEMENT

IV. 1. Management of sweet potato weevil using intercrops

Cenres: Dholi, Rajendranagar, Kalayani

IV. 2. Evaluation of *Colocasia* entries for *Phytophthora* leaf blight resistance/tolerance.

Centres : Kalyani, Dholi, Dapoli, Rajendranagar

Entries : BCC-2, BCC-5, BCC-9, BCC-25

IV.3. Integrated management of sweet potato weevil

Centres: Dharwad, Rajendranagar, Kalyani, Dapoli, Dholi, Udaipur, Ranchi

Management Strategies :

A. Collection and destruction of crop residues.
B. Removal of alternatehosts os SPW.
C. Dipping the planting material in 0.02% chlorpyriphos (20 EC) (10ml of pesticide in 10 liters of water)for 10 minutes before planting.
D. Earthing up 30 & 45 DAP
E. Irrigation at weekly interval.
F. Foliar spray of Chlorpyriphos 20 EC 0.02% / Imidachloprid 200SL @ 0.3 ml/litre of water/ indoxacarb 14.5 Sc @ 0.5ml/litre/Novaluron 10 EC @ 0.75ml/litre. 30 & 60 DAP.
G. Harvest at 105 DAP.
H. Spray bio-pesticide NANMA @ 5% at 15 days interval.
I. Spray bio-pesticide NANMA @ 5% at 30 days interval.
J. Mulching the plants with leaves – preferably Cassava leaves @ 15 days interval.
K. Mulching the plants with leaves – preferably Cassava leaves @ 30 days interval.

L. Set pheromone traps @10/ha (this treatment should kept away from the other treatments (perferably 500mts)

Treatments

T1. A+B+C+D+E+F+G
T2. A+B+ D+E+ G
T3. T2+ H
T4. T2+I
T5. T2+J
T6. T2+K
T7. T2+L
T8. Control

Replication – 3

Net plot size – 3.6 sqm

Observations to be taken
Sampling at 30 days interval and observe the weevil damage: uproot 3 plants per replication and observe the weevil infestation at the collar region and tubers.

Infestation index
 Less than 20%- Score 1
 Between 20-40%- Score-2
 Between 40-60%- Score-3
 Between 60-80%- Score-4
 Between 80-100%- Score-5

Recording yield at harvest

Marketable tubers, infested tubers

The infested tubers again be classified as mild (<10% infestation,) Medium (< 50%) and high (>50%)

IV.4. Mangement of Yam anthracnose

Centres : Rajendranagar, Udaipur, Jagdalpur, Assam

Design: RBD
No. of treatments : 8
Replication : 3
Plot size : 4.5 x4.5 m
No. of plants in net plot : 9

Treatments

T1: Standard package of practices (control)
T2: Healthy tuber + Soil application with Trichoderma
T3: Healthy tuber +Tuber treatment with Trichoderma
T4: Healthy tuber + spray (Carbendazim a.i 0.05%)
T5: Healthy tuber + Soil application with Trichoderma + Tuber treatment with Trichoderma
T6: Healthy tuber + Soil application with Trichoderma + Tuber treatment with Trichoderma + Spray
T7: Healthy tuber + Soil application with Trichoderma + spray
T8: Healthy tuber +Tuber treatment with Trichoderma + Spray

- Soil treatment with *Trichoderma asperellum* @ 50 g of 10^7 cfu g^{-1} two times one at the time of planting and another at third month
- Tuber treatment with *Trichoderma asperellum* @5 g in fresh cow dung slurry per kg of tuber
- Foliar spraying of Carbendazim @0.05% (1g Bavistin/ litre) three times at 15 days interval from third month after sprouting/ initiation of symptom
- Trichoderma culture will be supplied from CTCRI

Standard package of practices :

Use Healthy tubers for planting

Spacing: 90cm x90 cm
Fertilizer: 80: 60:80 kg NPK/ ha

IV.5. Evaluation of tuber crops based biopesticides against pests of national importance

Centre : Dapoli, Dholi, Kalyani, Rajendranagar

IV.6.Survey and surveillance of pests and diseases of root and tuber crops

Centres: All Centres

V. PLANTING MATERIAL PRODUCTION

Centres: All Centres

Quality planting material production and distribution

VI. RESEARCH EXTENSION INTERFACE

Centres : All Centres

VI.1. Popularization and Demonstration of tuber crops in Urban & Peri- urban and non-traditional areas for food and feed.

VI.2. Value addition and Women empowerment- Demonstrations

VI.3. Documentation of status of tuber crops in India