Recent deliverable technologies and issues on various crops developed by NARC

- Drs NP Adhikari and TB Ghimire

Latest advances in rice research in context of climate change
(For drought condition)

1. Sukkhka dhan 1 (IR74371-46-1-1)
2. Sukkhka dhan 2 (IR74371-54-1-1)
3. Sukkhka dhan 3 (IR74371-70-1-1)
   • Maturity : 125-130 days
   • Yield : 3.5-4.0 t/ha

 DirectoryInfo:
- Tasty and high milling recovery
- Diseases and pest field tolerance

Latest advances in rice research in context of climate change

A) Drought tolerance rice varieties released to mitigate the climate threat; 2010
   • Early: Hardinath-2 :125 days, 3.1-4.1 t/ha,
   • rainfed low land of terai & inner terai
   • Medium: Tarahara-1 : 113-125 days; 4.2 t/ha,
• Mid & Eastern terai region, aerobic condition
• Palatable and high milling recovery
• Diseases and pest field tolerance

Latest advances in rice research in context of climate change (Flood prone areas)
Submergence tolerance rice varieties identified to mitigate the climate threat;
• Swarna sub1 (Sona masuli) and Samba mahsuli sub 1
• For Central & Eastern Nepal
• Cooking quality (Softness) improved
  - IR-64 sub1 : Western Nepal
  - Submergence tolerance (up to 15 days)
Rice varieties for Import substitution and for Upland condition, 2010

- **Basmati** for both irrigated and rainfed condition of Terai (Mid & Eastern Region)
  - 150 days, 2.5-3.5 t/ha
  - Blast tolerant

- **Ghaiya-1** (Radha-32) for Rainfed upland, terai, river basin & mid hill valleys
  - 115 day, 2.5-3.5 t/ha
  - Blast and Blight tolerant

**Dry seeded rice (DSR) technology**

- Last week of May to 2nd wk of June - Opt. time of sowing in mid hills of CDR
- Buck wheat cover crop - minimum no. of weed & max. yield
- For the control of Spergulla (Thangne Jhar) - Pendimethaline @3.3 Lha
Spergula arvensis (Thangne Jhar) management (Parvat)
Research on Water Use Efficiency

Alternate wetting and Drying save water by 35-40%.

Recently released Wheat varieties

Vijay (BL 3063): Ug 99 (stem rust) resistant, for terai, tar and lower valleys. Early in maturity & suitable for late planting.
Wheat varieties for all over Terai Released in 2009

122 days, 4.5 t/ha, Terai, tar & lower valley, Res. against HLB, LR; heat stress condition

118 days, 4.8 t/ha, Terai, tars & lower valleys, Res. to L& YR, Tol. to HLB

Promising wheat genotypes for hilly region

- BL3235,
- BL3503 and
- NL1064 (Dhanphe) YR-R
Pipeline varieties for the terai
- BL3623, BL3555 and NL1073 varieties were found promising for terai region.

Wheat varieties for bakery purpose
- BL 1053, BL 1050, BL 3623,
- BL 3625, BL 3235, NL971, NL 1073

Promising Wheat genotypes for high hills of Nepal
- WK1902,
- WK1776
- WK1723

Spot blotch (Bipolaris sorokiniana) disease management in Wheat
- Two spray of Tilt (propiconazole) @ 1.5 ml/L at 70 and 85 DAS is most effective and economical
- Application of fungicide can save the wheat yield loss ranges from 24.5% to 42%

Outputs from Resource and Crop Management Activities
Maize Hybrids in process of release

Performance of Indian Hybrid maize in Chitwan (Winter season)

- Jaya Kisan 6485 (1255 kg/ha)
- Thunder 1203 kg/ha
- Bioseed 9681 (1191 kg/ha)
- C-6485 (1151.3 kg/ha)
- Sahara Premium
- Prince
- Challenger
- Pioneer 30V92
- Pioneer 30B07

Resource Conservation Technology of Maize

RCT of bed planting (direct bed preparation) provides the highest grain yield of maize 4.8 ton/ha (Rampur Composite) against Farmers Practice (3 harrowing and broadcasting) under Rampur condition.

Ear rot resistant maize vars/lines

- OPVs: Arun 4, Pool-16, Narayani, Manakamana-3
- Hybrid: RML-4 x NML-2, RML-3 x NML-2, RML-8 x RC
Foliar diseases tolerant lines
- Southern LB tolerant lines:
  - Posilo Makai-1, Ram SO3FO6
- Grey Leaf Spot:
  - Manakamana-3, Deuti, Manakamana-1, Ganesh-1 and Okhaldunga local: Moderately Resistant

Turcicum blight in maize
- Use of balanced dose of fertilizer along with Zn fertilizer
  - 120:60:60:25 Kg NPKZn/ha

Barley
- Pipeline (ready for recommendation for general cultivation):
  - X-Veola 38 and
  - X-Veola 45 for malt barley

Lentil varietal evaluation
- Maheswor Bharati - Khumaltar
- Varietal testing at NGLRP Rampur

Promising lines of Lentil
- ILL-7232 (For terai of Mid and Far western
- ILL-7164
- ILL-7515
- ILL-9993
- PL 406
**Stemphylium blight (Stemphylium botryosum) of lentil**
Genotype ILL 7164 with good yield potential combined with disease resistance

![Stemphylium blight](image1)

**Lentil (ILL 7723) genotypes at RARSN**

![Lentil (ILL 7723)](image2)
Chickpea Promising lines

Pigeonpea (ICP 7035)

Promising Phaseolus beans varieties

- Amber
- PDR-14
- Utkarsha
- 120:60:40 NPK kg/ha is recommended in irrigated condition of Central terai
White mold diseases of Rajma bean

White mold (Sclerotinia sclerotiorus)

- Benomyl 50 WP spray @ 1 g/L or Bavistin seed treatment + Bavistin foliar spray effective in reducing white mold disease.
- WM could be managed efficiently integrating the cultivation of disease tolerant variety (PDR-14), planting the crop in the last week of Aswin, spraying either carbendazim or benomyl and adopting crop rotation of 4-5 years.
Promising Rapeseed & mustard line

Toria: Morang Tori

Rayo: ICJ 9704, Divya

Diseases management in rapeseed & mustard

Mixing of *Trichoderma viridae* @10g/kg with well decomposed compost @10 ton/ha and incorporated in the soil was found effective in controlling the Alternaria disease and produced the highest seed yield.

Pipeline varieties of Buckwheat

- GF-5063 - Sweet type
- Acc# 2227-1 - Bitter type

Promising varieties of Jute

- JRO 524
- KEN-DS-058
- KED-DS-056
- F6 Oli
- O-4

Weed infested jute field
Promising technology in Jute

- Targa super @ 2ml/L-15-20 DAS for weeds
- Red amaranthus 10 kg + Jute 6 kg/ha mix cropping for weed smoothening
- Bavistin @2g/L at 60, 70 & 80 DAS-Stem rot disease in seed crop
- 40:20:60 NPK kg/ha for higher fibre yield

Sugarcane promising line

- Cose-98231 - For irrigated and rain fed, tolerant to red rot.
- UP 9742 - In mid late and upland.
- Cose 98182 and BO-131 - In rainfed condition

Malepatan 1- Vegetable cowpea

Hybrid tomato seed production (At Farmers group)

- Female: HRD-1
- Male: HRD-17
- F1-Shrijana
- Yield 3-4 g/kg fresh fruits

Root Knot Nematode mgmt in plastic house

- Grafting tomato with wild brinjal (Solanum sissimbrifolium)
- 38% fruit yield increment
Pipeline potato clones
- Clones CIP 389746.2
- BSUPO3
- LBr40 and CIP 388580.6 - Hills

Late blight resistant Potato clones
- CIP 393385.39, PR 85861.11,
- PR 35861.2, CIP 393280.57,
- CIP 392657.8, PR 85861.12 and
- CIP 384321.15

Potato tuber moth control
Sweet flag (Acorus calamus) stolen dust with potato tuber @ 5g dust per kg of potato tuber for 3-4 months

Club root of Crucifer mgmt
- New chemical Fluazinan @ 0.2% is found as effective as Nebijin.
- Two bio control agent i.e. Trichoderma harzianum (T22) and T69 are effective
- Tolerant line of cabbage:
  - Clapton B, Clarify A and B, Kilaton, Kila herb, Kilaxy, Kilazol and Tekila

Organic Coffee production
Promising coffee genotypes:
- Yellow Catura
- Tekisik
- Chhettradeed
Nutrient mgt:

- Mustard cake @ 2.5 t/ha and Poultry litter @ 5 t/ha proved better for plant growth and berry size
- 15 kg compost/plant with mulching

Recently Established Varietal Evaluation Block of Spur type of apple varieties at HRS, Jumla
Drumstick plant propagated through seeds